CDP-D500

SERVICE MANUAL

US Model
Canadian Model
AEP Model
UK Model

Model Name Using Similar Mechanism	NEW
CD Mechanism Type	CDM19G-5R
Base Unit Name	BU-5R
Optical Pick-up Name	KSS-213B/K-N

SPECIFICATIONS

Compact disc player

Frequency response 5 Hz to 20 kHz ± 0.3 dB (at 10 kilohms)

Signal-to-noise ratio More than 100 dB (20 kHz LPF, IHF-A weight)

Dynamic range More than 98 dB

Harmonic distortion Less than 0.004% (1 kHz, 0 dB, 20 kHz LPF)

Channel separation More than 100 dB (1 kHz, 20 kHz LPF)

Analog outputs

Connector	Type	Output impedance	Maximum output level	Load impedance
ANALOG OUT (BALANCE)	XLR-3	100 ohms	+24 dBs	More than 10 kilohms
ANALOG OUT (UNBALANCE)	Phono jacks	200 ohms	+ 9 dBs	More than 10 kilohms
PHONES	Stereo phone jack	150 ohms	15 mW	32 ohms

Digital outputs

Connector	Type	Output impedance	Load impedance
DIGITAL OUT (AES/EBU)	XLR-3	50 ohms (balanced)	110 ohms
DIGITAL OUT (IEC-958)	Phono jacks	75 ohms (unbalanced)	75 ohms

Word input

Connector	Type	Input impedance	Input level	Input frequency
EXT SYNC INPUT	BNC	22 kilohms/ 75 ohms, switchable	2 V p-p (TTL level)	44.1 kH ±12.5%

– Continued on next page –

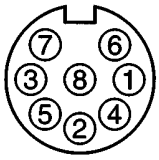
COMPACT DISC PLAYER

MICROFILM

SONY®

REMOTE (8P) connector

(Top view)



Pin assignment

Pin number	Mode 1	Mode 2
①	$\overline{\text{PLAY}}$ COMMAND IN ⌐¬	$\overline{\text{PLAY}}$/$\overline{\text{STOP}}$ COMMAND IN PLAY STOP
②	$\overline{\text{STOP}}$ COMMAND IN ⌐¬	IC**
③	NC*	BACK CUE COMMAND IN ⌐¬
④	$\overline{\text{PLAY}}$ STATUS PIT	←
⑤	$\overline{\text{STOP}}$ STATUS OUT	←
⑥	NC*	←
⑦	+5V OUT	+5 V OUT
⑧	GND	GND

* No connection
** Inner connection

General

Power requirements

Where purchased	Power requirements
U.S.A., Canada	120 V AC, 60 Hz
Europe	230 V AC, 50/60 Hz

Power consumption	16 W
Dimensions (approx.) (w/h/d)	482 × 145 × 355 mm (19 × 5 3/4 × 14 in.) incl. projecting parts
Mass (approx.)	7.2 kg (15 lbs 13 oz)

Supplied accessories

AC power cord (1)
Remote commander (1)
Sony SUM-3 (NS) batteries (2)
Screws (M5 × 12) (4)
Decorative washers (4)

Design and specifications are subject to change without notice.

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

This appliance is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT MARKING is located on the rear exterior.

CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer:
Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage.
Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers.). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

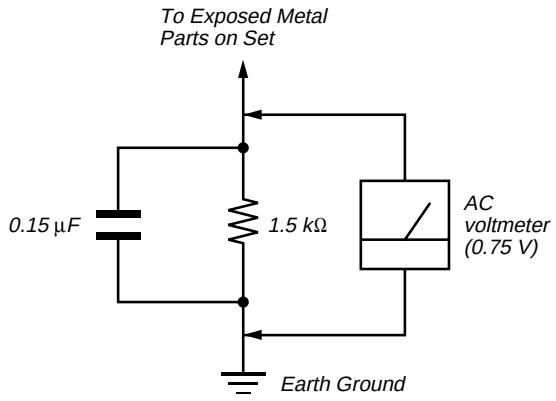


Fig. A. Using an AC voltmeter to check AC leakage.

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SECTION 1
SERVICING NOTES

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

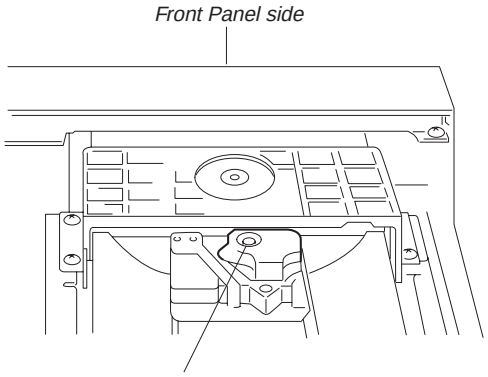
The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.
During repair, pay attention to electrostatic break-down and also use the procedure in the printed matter which is included in the repair parts.
The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe from more than 30 cm away from the objective lens.

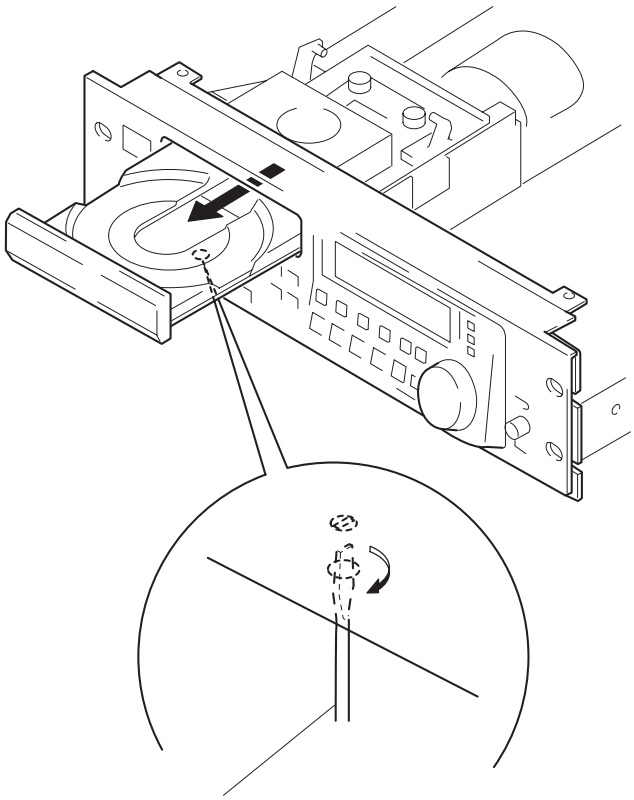
LASER DIODE AND FOCUS SEARCH OPERATION CHECK

1. Make POWER switch on with no disc inserted and disc table closed.
2. Confirm that the following operation is performed while observing the objective lens.



❶ *Confirm that laser beam spread.*
❷ *Up and down motion of the objective lens. (3 times)*

HOW TO OPEN THE DISC TRAY WHEN POWER SWITCH TURNS OFF



Insert a tapering driver into the aperture of the unit bottom, and turn to the direction of arrow.

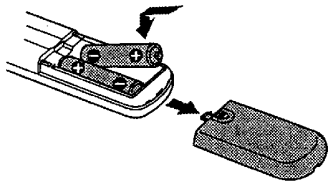
** To close the disc tray, turn the driver in the reverse direction.*

Unpacking

Check that you received the following items:
- AC power cord (1)
- Remote commander (1)
- Sony SUM-3 (NS) batteries (2)
- Screws (M5 × 12) (4)
- Decorative washers (4)

Inserting batteries into the remote commander

You can control the player using the supplied remote commander.
Insert two size AA (R6) batteries by matching the + and – on the batteries. When using the remote commander, point it at the remote sensor in the left of the display on the player.



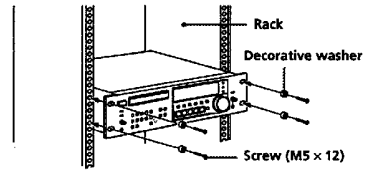
When to replace batteries
With normal use, the batteries should last for about six months. When the remote commander no longer operates the player, replace all the batteries with new ones.

Notes
- Do not leave the remote commander near an extremely hot or humid place.
- Do not drop any foreign object into the remote casing, particularly when replacing the batteries.
- Do not expose the remote sensor to direct sunlight or lighting apparatuses. Doing so may cause a malfunction.
- If you don't use the remote commander for an extended period of time, remove the batteries to avoid possible damage from battery leakage and corrosion.

Rack Mounting

You can install the player in an EIA standard 19-inch rack. Be sure to turn off the player before you install it.

Remove the foot bases from the player. Then insert the player into the rack, and secure it with the supplied decorative washers and screws (M5 × 12).

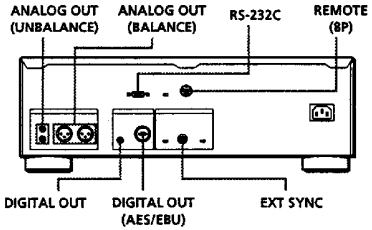


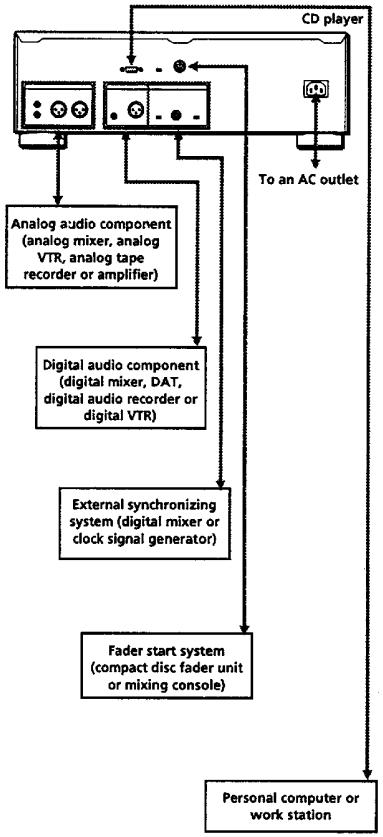
Note
Do not attach the foot base screws back to the player. It may damage inside of the player.
Be sure to keep the foot bases and screws.

Hooking Up the System

Overview

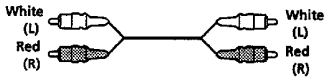
This section describes how to hook up the CD player to other audio components. Be sure to turn off the power of each component before making the connections.




CD player
To an AC outlet
Analog audio component (analog mixer, analog VTR, analog tape recorder or amplifier)
Digital audio component (digital mixer, DAT, digital audio recorder or digital VTR)
External synchronizing system (digital mixer or clock signal generator)
Fader start system (compact disc fader unit or mixing console)
Personal computer or work station

What cords will I need?

■When making analog hookups
- Audio cord (RK-C505KS/510KS/515KS, not supplied) (1)



- Analog audio cannon cables (EC-0.5XLR2/5XLR2/10XLR2, not supplied) (2)

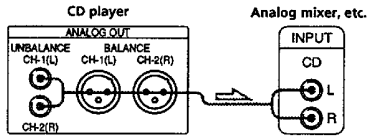
■When making digital hookups
- Coaxial digital connecting cable (VMC-1ES/3ES/5ES, not supplied) (1)

- Digital audio cannon cable (ECD-3C/10C/30C, not supplied) (1)

Hookups

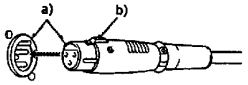
■When making analog hookups

- **When connecting with an audio cord**
  Connect a component to the ANALOG OUT (UNBALANCE) jacks.
  Be sure to match the color-coded cord to the appropriate jacks on the components: Red (right) to Red and White (left) to White. Be sure to make connections firmly to avoid hum and noise.

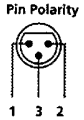


This section is extracted from instruction manual.

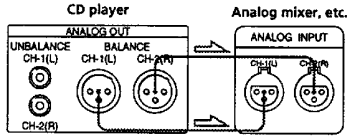
• **When connecting with analog audio cannon cables**
Connect a component to the ANALOG OUT (BALANCE) connectors.



a) To plug in the cables, match these positions and insert the cables firmly.
b) To detach the cables, pull the cables out while pressing the lock button.

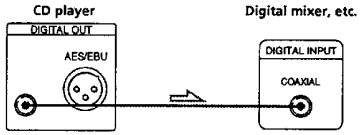


For Europe	For U.S.A. and Canada
1: GND	1: GND
2: HOT	2: COLD
3: COLD	3: HOT

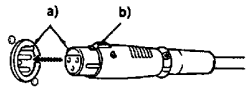


■When making digital hookups
When making these connections, you cannot use the fading in or out function (page 12).

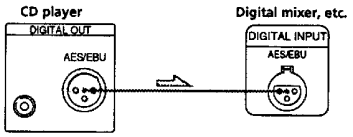
• **When connecting with a coaxial digital connecting cable**
Connect a component to the DIGITAL OUT connector.



• **When connecting with a digital audio cannon cable**
Connect a component to the DIGITAL OUT (AES/EBU) connector.



a) To plug in the cables, match these positions and insert the cables firmly.
b) To detach the cables, pull the cables out while pressing the lock button.



Connecting a personal computer or work station
You can control the player with a computer by connecting your personal computer or work station.

Connect the equipment to the RS-232C connector using a D-Sub cable.

For details on setting of the RS-232C connector, see "Setting the Menu Options" on page 18.

If you have CD-TEXT discs
The player can read the information stored on CD-TEXT discs. When making this connection, the player transmits the CD-TEXT information to your personal computer or work station.

Connecting a fader start system
By connecting a fader start system to the REMOTE (8P) connector on the rear panel of the player, you can fade the sound in or out by remote control at the desired point on a disc.

Connecting an external synchronizing system
By connecting an external synchronizing system, the player operates on the clock frequency transmitted from the system.

1 Connect an external synchronizing system to the EXT SYNC connector.
2 Input the clock signal of 44.1 kHz TTL level.
3 Set EXT SYNC ON/OFF to ON.

When you don't use the external synchronizing system, set the switch to OFF.

Setting the REMOTE SELECT switch
Set REMOTE SELECT on the front panel of the player to activate the connector(s) for the equipment you want to use.

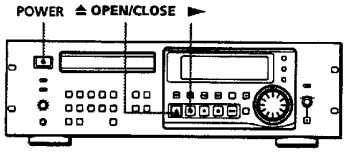
Connector	Set the switch to
RS-232C	SERIAL
REMOTE (8P)	PARALLEL
Both RS-232C and REMOTE (8P)	the center position

Connecting the AC power cord

Connect the AC power cord (supplied) to AC IN on the rear panel and connect the other end to a wall outlet.

Basic Operation

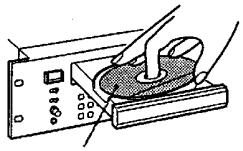
Before you begin, make sure you have connected the player and other component correctly and firmly as indicated on pages 4–6.



1 Turn on the connected component.

2 Press POWER to turn on the player.

3 Press ≜ OPEN/CLOSE, and place a disc on the disc tray.



With the label side up

4 Press ►.
The disc tray closes and the player plays all the tracks once (Continuous Play).
You can also start play by turning the SHUTTLE ring clockwise.

To stop play
Press ■.

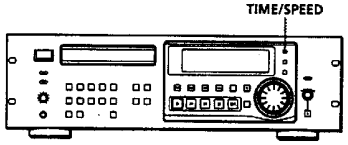
When you want to	Press
Pause	II
Resume play after pause	II or ►
Go to the next track	►►I or turn the JOG dial clockwise
Go back to the previous track	I◄◄ or turn the JOG dial counterclockwise
Stop play and remove the disc	≜ OPEN/CLOSE

When you listen with headphones
Connect your headphones to the PHONES jack. You can adjust the volume with the PHONE LEVEL control.

If play doesn't start from the first track
Press CONTINUE.

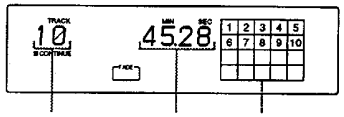
Using the Display

You can check information about the disc using the display.



Checking the total number and playing time of the tracks

Press TIME/SPEED before you start playing.
The display shows the total number of tracks, total playing time and music calendar.

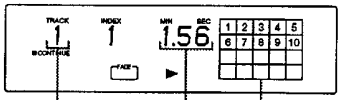


Total number of tracks | Total playing time | Music calendar

If the disc has more than 20 tracks, the ► indication appears next to 20 in the music calendar.
The information also appears when you press the ≜ OPEN/CLOSE button to close the disc tray.

Display information while playing a disc

While playing a disc, the display shows the current track number, elapsed time and the music calendar.

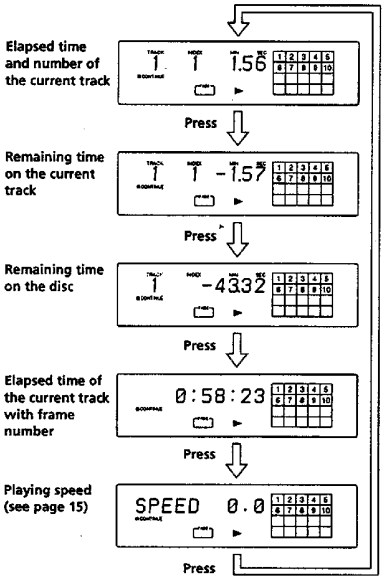


Current track number | Elapsed time | Music calendar

The track numbers in the music calendar disappear after they are played.

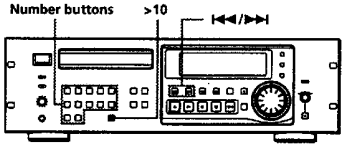
Changing the display information

Each time you press the TIME/SPEED button while playing a disc, the display changes as shown in the chart below.



Locating a Specific Track

You can quickly locate any track while playing a disc using the I◄◄ / ►►I (AMS: Automatic Music Sensor) buttons or number buttons.

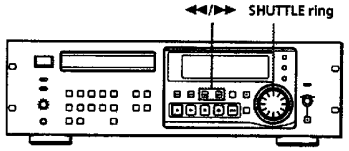


To locate	Press
The next or succeeding tracks	►►I repeatedly or turn the JOG dial clockwise until you find the track
The current or preceding tracks	I◄◄ repeatedly or turn the JOG dial counterclockwise until you find the track
A specific track directly	Number button of the track

When you directly locate a track numbered over 12 (or 10 when using the remote commander)
Press >10 first, then the corresponding number buttons.
To enter "0," use button 10.
Example: To play track number 30
Press >10 first, then 3 and 10.

Locating a Particular Point in a Track

You can search for a particular point in a track while playing a disc.



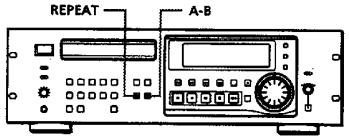
To search for	You need to
A point while monitoring the sound	Press ▶▶ (forward) or ◀◀ (backward) and hold down until you find the point
A point quickly by observing the display during pause	Press ◀◀/▶▶ and hold down until you find the point. You will not hear the sound during the operation.
A point using the SHUTTLE ring	Turn the SHUTTLE ring and hold until you find the point. The search speed increases as you turn the SHUTTLE ring further.

Note

If "- OVER -" appears in the display, the disc has reached the end while you were pressing the ▶▶ button or turning the SHUTTLE ring clockwise. Press ◀◀ or turn the SHUTTLE ring counterclockwise to go back.

Playing Tracks Repeatedly

You can play tracks repeatedly in any play mode.



Press REPEAT while playing a disc.
"REPEAT" appears in the display. The player repeats the tracks as follows:

When the disc is played in	The player repeats
Continuous Play (page 8)	All the tracks
Shuffle Play (page 16)	All the tracks in random order
Program Play (page 11)	The same program
Delete Play (page 16)	All the remaining tracks
Delete Shuffle Play (page 16)	All the remaining tracks in random order

To cancel Repeat Play

Press REPEAT repeatedly until "REPEAT" disappears from the display.

Repeating the current track

You can repeat only the current track in any play mode.

While the track you want is being played, press REPEAT repeatedly until "REPEAT 1" appears in the display.

Repeating a specific portion (A↔B Repeat)

You can play a specific portion in a track repeatedly. This might be useful when you play a music instrument or memorize lyrics.
Note that you cannot repeat a portion extending to two tracks.

1 While playing a disc, press A-B when you find the starting point (point A) of the portion to be played repeatedly.
"A-" flashes in the display.

2 When you reach the ending point (point B), press A-B again.
"A-B" lights up in the display and the player plays this specific portion repeatedly.

To cancel A↔B Repeat

Press REPEAT.

Setting a new starting point

You can move the repeated portion forward by changing the starting point.

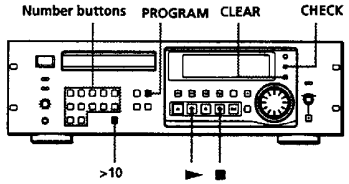
1 Press A-B while the player is repeating the specific portion.
The ending point B becomes the new starting point A. "A-" flashes in the display.
2 When you reach the new ending point, press A-B again.
"A-B" appears. The player repeats between the new starting and ending points.

When you want to restart from the starting point A

Press ► during A↔B Repeat.

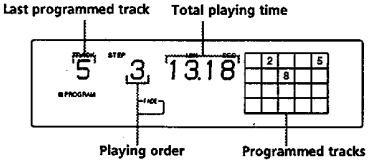
Creating Your Own Program (Program Play)

You can arrange the order of the tracks on a disc and create your own program. The program can contain up to 24 tracks.



1 Press PROGRAM.
"PROGRAM" appears in the display.

2 Press the number buttons of the tracks you want to program in the order you want.
To program tracks numbered over 12 (or 10 when using the remote commander), use the >10 button (see page 9).



If you've made a mistake

Press CLEAR, then press the correct number button.

3 Press ► to start Program Play.

To cancel Program Play

Press CONTINUE.

When tracks, which aren't numerically consecutive on the disc, are programmed consecutively (i.e. 1, 3, 5 etc.)

A one-second access time blank is added between the tracks.

You can check how a track will affect the total playing time of the program (Program Edit)
To select a track, turn the JOG dial or press I◄◄ / ►►I and check the total playing time. Then press PROGRAM to confirm your selection.

The program remains even after the Program Play ends
When you press the ► button, you can play the same program again.

Notes
- "−−.−−" appears instead of the total playing time in the display when it exceeds 100 minutes.
- "PGM FULL" appears in the display when you try to add a track to a program which already contains 24 tracks.

Checking the track order

You can check your program before or after you start playing.

Press CHECK.
Each time you press this button, the display shows the track number in the programmed order. After the last track in the program, the display shows "- END -" and returns to the original display. If you check the order after you start playing, the display shows only the remaining track numbers.

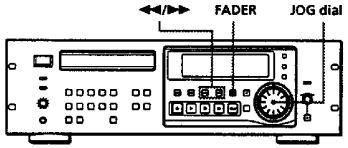
Changing the track order

You can change your program before you start playing.

To	Press
Erase a track	CHECK until the track you don't want appears in the display, then press CLEAR
Erase the last track in the program	CLEAR. Each time you press the button, the last track will be cleared.
Add tracks to the end of the program	Number buttons of the tracks to be added
Change the whole program completely	■ (stop). Create a new program following the programming procedure.

Fading In or Out

You can manually fade the sound in or out to prevent tracks from starting or ending abruptly.
Note that you cannot use this effect when you use the DIGITAL OUT jack or connector.



To	Press FADER
Start play fading in	During pause. The [FADE] indication flashes and play fades in.
End play fading out	When you want to start fading out. The [FADE] indication flashes. The play fades out and the player pauses.

You can fade in or out by remote control
Connect a fader start system to the REMOTE (8P) connector on the rear panel of the player (see "Connecting a fader start system" on page 7).

Changing the fading time

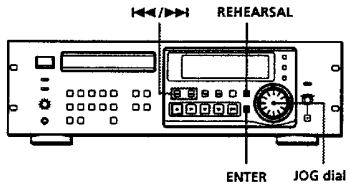
You can change the fading time from 1 to 9 seconds before fading in or out. The fading time is factory set to 5 seconds.

1 Press FADER before you start playing.

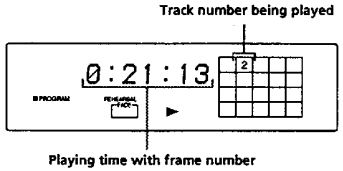
2 Press ◄◄/►► or turn the JOG dial to specify the fading time.

Setting the Cue Point in a Track (Rehearsal)

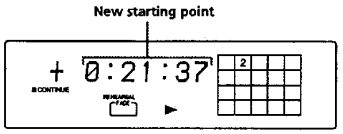
You can play a portion of a track repeatedly to help you find the cue point. While searching for the point, the display shows the elapsed time with frame number so you can set the point accurately.



1 While playing a disc, press REHEARSAL just before the cue point you want to set.
"REHEARSAL" appears in the display and the player plays the next few seconds repeatedly.



2 If you want to shift the starting point forward, turn the JOG dial clockwise or press ►►I.
To shift the starting point backward, turn the JOG dial counterclockwise or press I◄◄.
Each change in the JOG dial position or press of the I◄◄ / ►►I buttons shifts the starting point.



"+" or "−" appears before the playing time when you change the starting point.

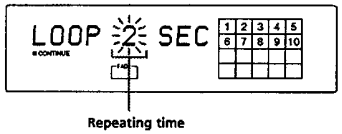
3 Press ENTER when you find the cue point.
"RHSL END" appears in the display and the player pauses at that point.

To resume play
Press ► or II.

Changing the repeating time

When searching for the cue point, you can change the amount of time the player repeats from 1 to 9 seconds. The repeating time is factory set to 2 seconds.
You can also change the repeating time before you start searching

1 Press REHEARSAL until "LOOP * SEC" appears in the display.

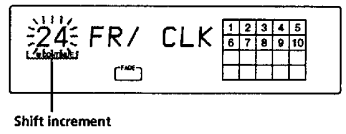


2 Turn the JOG dial until the repeating time you want appears in the display.

Changing the shift increment

When shifting the starting point to be played repeatedly, you can change the increment from 1 to 74 frames. The shift increment is factory set to 24 frames.
You can also change the shift increment before you start searching.

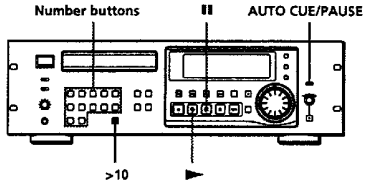
1 Press REHEARSAL until "** FR/CLK" appears in the display.



2 Turn the JOG dial until the number of frames you want appears in the display.

Playing a Track From the Very Beginning (Auto Cue)

You can skip the lead-in portion of a track and start playing from where the sound actually begins. This is useful when, for example, you want to add music to a video tape.



1 Set AUTO CUE/PAUSE to A.CUE.
"AUTO CUE" appears in the display.

2 Press II.

3 Press the number button of the track you want.
The player locates the very beginning of the sound in the track.

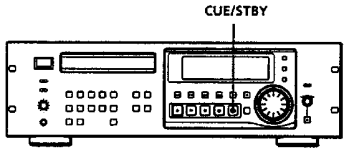
4 Press ► or II to start playing.

To cancel Auto Cue
Set AUTO CUE/PAUSE to OFF.

You can change the Auto Cue point level (threshold level)
The player is factory set to detect the Auto Cue point of each track where the sound louder than –60 dB begins. You can select the Auto Cue point among 5 levels. For details, see "Setting the Menu Options" on page 18.

Standing by at the Starting Point (Cue Standby)

You can go back to the starting point in the current track and stand by there.



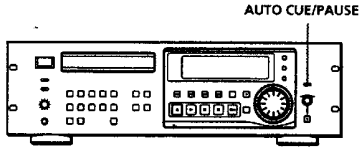
Press CUE/STBY while playing a disc.
The player pauses at the point as follows:

When the AUTO CUE/ PAUSE switch is set to	The player pauses at
OFF	The beginning of the current track
A.CUE (page 14)	The point where the sound of the current track actually begins
A.PAUSE (page 15)	The beginning of the current track

When you started play using the Rehearsal function
The player pauses at the cue point you set (see "Setting the Cue Point in a Track" on page 13). If you press the CUE/STBY button while playing a track other than the one in which you have set the cue point, the player pauses at the beginning of the current track.

Pausing at Each Track (Auto Pause)

You can set the player to pause at the beginning of the next track each time a track is finished playing.
This is useful when, for example, you want to record only one track or several tracks out of order (i.e. 1, 3, 5 etc.).



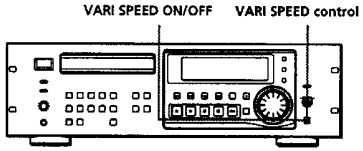
Set AUTO CUE/PAUSE to A.PAUSE.
"AUTO PAUSE" appears in the display.

To resume play
Press ► or II.

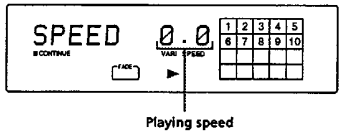
To cancel Auto Pause
Set AUTO CUE/PAUSE to OFF.

Changing the Playing Speed (Variable Speed Play)

You can adjust the playing speed within ± 12.5% of the normal speed. As the playing speed changes, the pitch also changes.



1 While playing a disc, press VARI SPEED ON/OFF until "VARI SPEED" lights up in the display.
"SPEED ∗.∗" appears in the display.



2 Turn the VARI SPEED control to select the desired speed.
The playing speed changes in 0.1% increment.

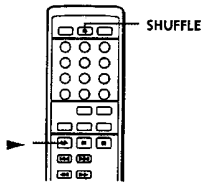
To reset the playing speed
Push the VARI SPEED control while the display shows the playing speed.

To cancel Variable Speed Play
Press VARI SPEED ON/OFF.
If you want to play the disc again with the speed you set, press VARI SPEED ON/OFF.

Note
When using the external synchronizing system (see page 7), the playing speed does not change.

Playing in Random Order (Shuffle Play)

You can have the player "shuffle" tracks and play in random order.



1 Press SHUFFLE on the remote commander.
"SHUFFLE" appears in the display for a while.

2 Press ► to start Shuffle Play.
The ⟲ indication appears while the player is "shuffling" the tracks.

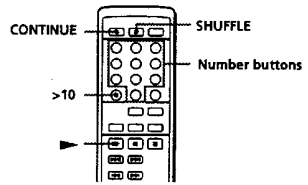
To cancel Shuffle Play
Press CONTINUE.

You can start Shuffle Play while playing
Press SHUFFLE on the remote commander, and Shuffle Play starts from the current track.

You can delete unwanted tracks during Shuffle Play (Delete Shuffle Play)
Press the number button of the track you want to delete. The track number and "DELETE" appear in the display, then the track number disappears from the music calendar.
If you want to restore the track, press the number button again.
To restore all the tracks, press ■ in stop mode.

Playing Only Specific Tracks (Delete Play)

You can delete unwanted tracks and play only the remaining tracks.



1 Press SHUFFLE on the remote commander.
"SHUFFLE" appears in the display for a while.

2 Press the number buttons of the tracks you want to delete.
The track numbers disappear from the music calendar and "DELETE" appears for a while.
To delete a track numbered over 10, use the >10 button (see page 9).

If you've made a mistake
Press the number button of the track. "SELECT" appears in the display and the track will be restored.

3 After you've deleted all the tracks you don't want, press CONTINUE.
"CONTINUE" appears in the display.

4 Press ► to start Delete Play.

To cancel Delete Play
Press ■ in stop mode.

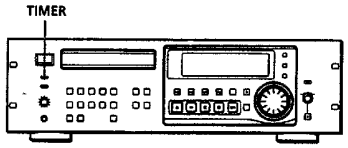
The player keeps the deleted tracks in memory even after the Delete Play ends
When you press the ► button, you can play only the remaining tracks again.

You can play the tracks in random order (Delete Shuffle Play)
Just skip Step 3 in the above procedure.

You can delete a track while playing
Press CLEAR while the track is being played. The player deletes the track and starts playing the next track.

Playing Using a Timer

You can start playing a disc at any time you want by connecting a timer (not supplied). Please also refer to the instructions for the timer if you need help.



1 Set TIMER on the player to PLAY.

2 Set the timer to the time you want.
The player turns off. When the set time comes, the player turns on and starts playing.

3 When you are finished using the timer, set TIMER on the player to OFF.

Last Mode Memory

The player remembers the settings last time you used the player even if you turn off the player. When you turn on the player again, the player is ready to play the disc in the same way. The player remembers the following settings:
— Play mode (Continue [page 8], Program* [page 11] or Shuffle [page 16])
— Repeat mode (Repeat, Repeat 1 or Repeat off [page 10])
— Fading time (page 12)
— Repeating time of the Rehearsal function (page 13)
— Shift increment of the Rehearsal function (page 13)
— Playing speed (page 15)
— Setting of the VARI SPEED ON/OFF button (page 15)

* The player remembers the programmed tracks unless you replace the disc. When you turn on the player again, you can play the same program.

The player also remembers all the menu option settings. For details on menu options, see page 18.

Setting the Menu Options

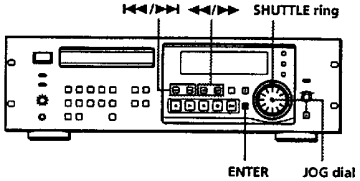
The player has 7 menu options as follows:

1 **Key Protect**
You can make the controls on the player ineffective except for the EJECT, STOP, ENTER and CLEAR buttons.

2 **Remote Protect**
You can make the supplied remote commander ineffective.

3 **Auto Cue threshold level**
You can change the cue point level of the Auto Cue function (see page 14).

4–7 **RS-232 baudrate/data/stop/parity**
When you connect your personal computer or work station to the RS-232C connector (see page 6), you can set each option.



1 Press ENTER in stop mode.

2 Turn the SHUTTLE ring or press I◀◀ /▶▶I until the display shows the menu option you want to set.
The menu option number appears in the music calendar.

3 Turn the JOG dial or press ◀◀/▶▶ until the desired setting flashes in the display.

4 Press ENTER to select the setting.
The selected setting lights up in the display.

5 Press ENTER again to return to the original display.

To initialize all the settings
Press CLEAR while setting menus.

The following menu choices are available for each option. The initial settings are indicated with underline:

Menu options	Select
Key Protect*	LOCAL ON to make the controls effective. LOCAL OFF to make the controls ineffective.
Remote Protect	RM ENABLE to make the remote commander effective. RM DISABLE to make the remote commander ineffective.
Auto Cue threshold level	Among ACUE –72DB, ACUE –66DB, ACUE –60DB, ACUE –54DB and ACUE –54DB
RS-232 baudrate	Among BAUD 1200, BAUD 2400, BAUD 4800, BAUD 9600, BAUD 19200 and BAUD 38400
RS-232 data	DATA 8 BIT or DATA 7 BIT
RS-232 stop	STOP 1 BIT or STOP 2 BIT
RS-232 parity	Among PARITY OFF, PARITY ODD and PARITY EV

* If you press a button on the player after setting the option to LOCAL OFF, "PROTECTED" appears in the display.

Precautions

On safety
- Caution — The use of optical instruments with this product will increase eye hazard.
- Should any solid object or liquid fall into the cabinet, unplug the player and have it checked by qualified personnel before operating it any further.

On power sources
- Before operating the player, check that the operating voltage of the player is identical with your local power supply. The operating voltage is indicated on the nameplate at the rear of the player.
- The player is not disconnected from the AC power source (mains) as long as it is connected to the wall outlet, even if the player itself has been turned off.
- If you are not going to use the player for a long time, be sure to disconnect the player from the wall outlet. To disconnect the AC power cord (mains lead), grasp the plug itself; never pull the cord.
- AC power cord must be changed only at the qualified service shop.

On placement
- Place the player in a location with adequate ventilation to prevent heat build-up in the player.
- Do not place the player on a soft surface such as a rug that might block the ventilation holes on the bottom.
- Do not place the player in a location near heat sources, or in a place subject to direct sunlight, excessive dust or mechanical shock.

On operation
- If the player is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense on the lenses inside the player. Should this occur, the player may not operate properly. In this case, remove the disc and leave the player turned on for about an hour until the moisture evaporates.

On adjusting volume
- Do not turn up the volume while listening to a portion with very low level inputs or no audio signals. If you do, the speakers may be damaged when a peak level portion is played.

On cleaning
- Clean the cabinet, panel and controls with a soft cloth slightly moistened with a mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzine.

If you have any questions or problems concerning your player, please consult your nearest Sony dealer.

Notes on CDs

On handling CDs
- To keep the disc clean, handle the disc by its edge. Do not touch the surface.
- Do not stick paper or tape on the disc.

Not this way

- Do not expose the disc to direct sunlight or heat sources such as hot air ducts, nor leave it in a car parked in direct sunlight as there can be considerable rise in temperature inside the car.
- Do not use any commercially available stabilizer and/or disc protector. If you do, the disc and the player may be damaged.
- After playing, store the disc in its case.

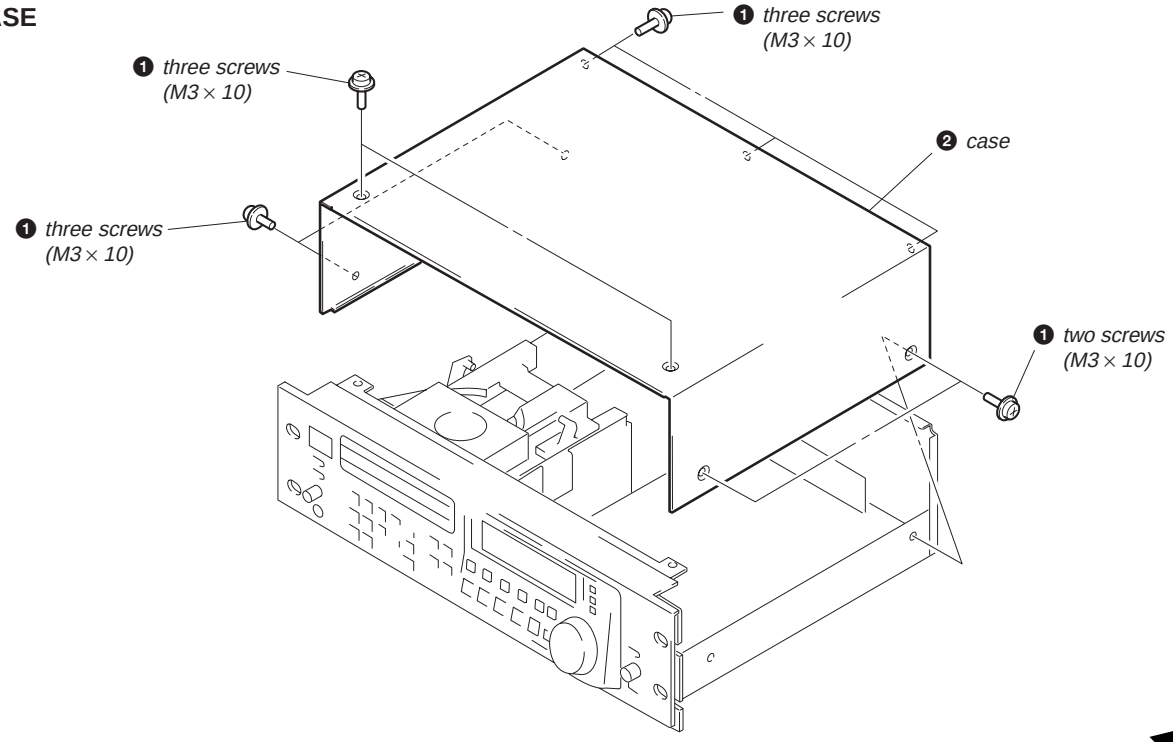
On cleaning
- Before playing, clean the disc with a cleaning cloth. Wipe the disc from the center out.

- Do not use solvents such as benzine, thinner, commercially available cleaners or anti-static spray intended for vinyl LPs.

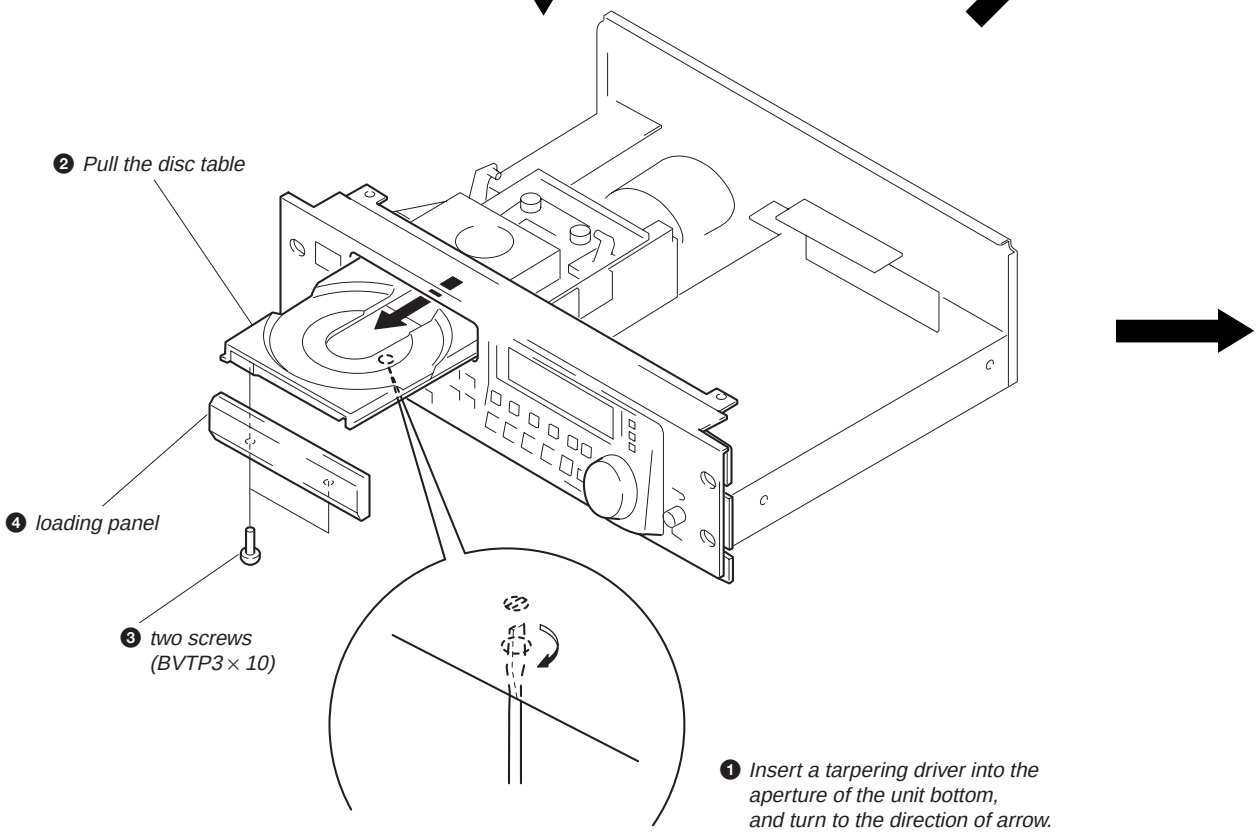
SECTION 3
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

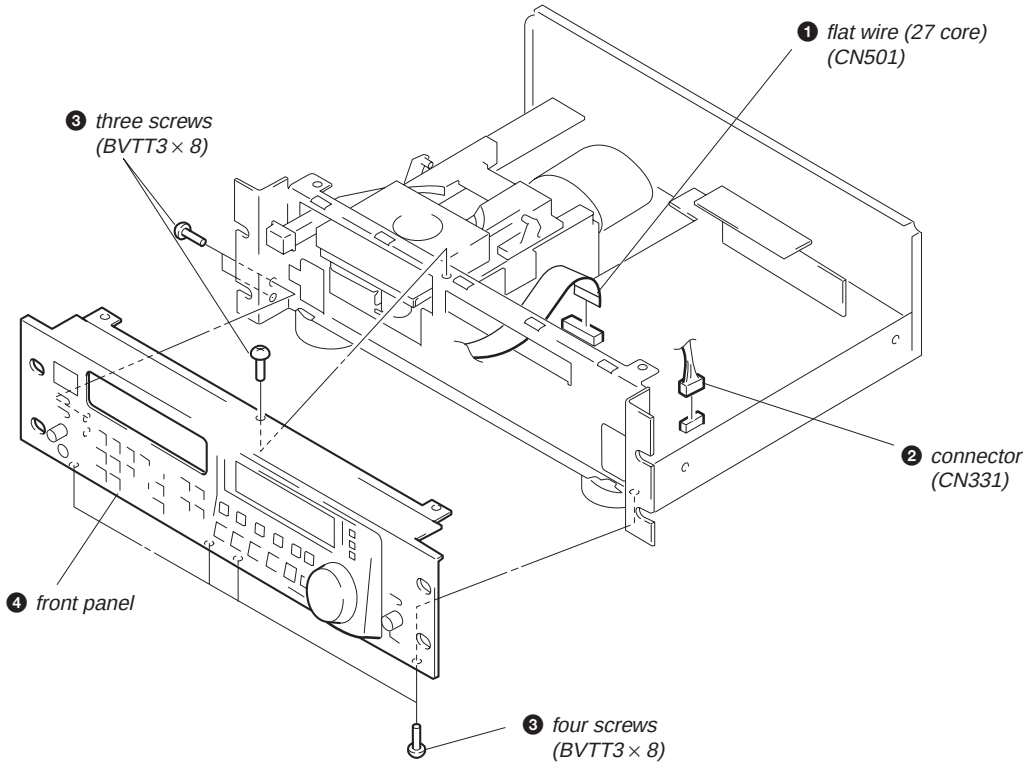
CASE



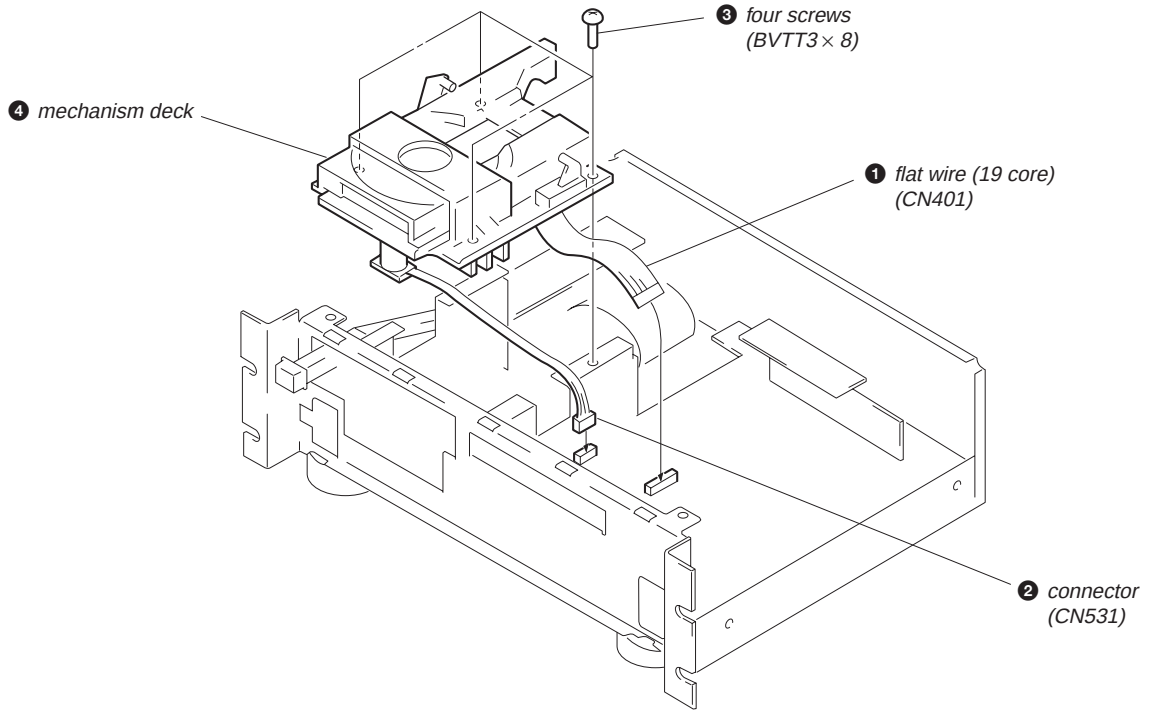
LOADING PANEL


❷ Pull the disc table
❹ loading panel
❸ two screws (BVTP3 × 10)
❶ Insert a tarpering driver into the aperture of the unit bottom, and turn to the direction of arrow.

FRONT PANEL SECTION



MECHANISM DECK



SECTION 4
TEST MODE

Key Check

(tact switch)

1) Connect the test point TP (ADJ) on MAIN board to the ground with a lead wire on MAIN board.
2) Turn on the power with turning OFF the TIMER SW.
   ↓
   "KEY TEST" shall be shown.
3) When the TACT SW is pushed, the order of pushing is shown on digit 0 and 1.
4) It will count up until 34 which is the maximum key number. "END" will be shown after 34.

(slide switch)

Words as below shall be shown.

	OFF	ON
TIMER SW	NULL (not shown)	REPEAT
REMOTE SELECT SW	CONTINUE/ PROGRAM	Parallel ON → PROGRAM Serial ON → CONTINUE
AUTO CUE/ PAUSE SW	NULL (not shown)	A.CUE ON → AUTO CUE A.PAUSE ON → AUTO PAUSE

(JOG)

When dial the VARI SPEED JOG/AMS dial, the value on digit 6 and 7 will be clocwise/rev clockwise.

(shuttle)

Is it turns to forward direction, calendar will show 1·2·3 and 4 and if turns to backward direction. Calendar will show 16·17·18 and 19.

EDP Bridge Check

1) Connect the test point TP (ADJ) on MAIN board to the ground with a lead wire on MAIN board.
2) Turn on the power, with turning ON the TIMER SW.
3) Elements next to digit/segment will turn on and off mutually.
4) When both sides elements turn on at the same time the grid is a bridge.
5) When the calendar does not work correctly, segment is a bridge.

S-RAM Verify Check

1) Connect the test point TP (ADJ) on MAIN board to the ground with a lead wire on MAIN board.
2) Turn on the power, with turning ON the TIMER SW and CUE SW.
3) Address (0x8000~0x9fef) will be written by µ-com on the digit 5 and 6, and they will be read by µ-com on the digit 8 and 9, then the value shall be shown on the digit 0 to 3.
   When the written value do not agree with the read value, "VERIFY ERROR" will be shown.
   After that, it will show the position of address line and the data line which are cause of S-RAM bridge and a float.

CXD2545 Servo Check

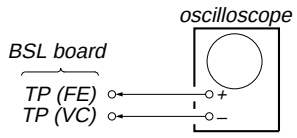
1) Connect the test point TP (ADJ) on MAIN board to the ground with a lead wire on MAIN board.
2) Turn on the power, tuning ON the TIMER SW.
3) Establish as below articles with the combination of TENKEY and TIMER SW.

	TENKEY	MODE
TIMER SW OFF	3	Tracking servo off
	8	Tracking servo on
TIMER SW ON	1	S-cuve observe

SECTION 5
ELECTRICAL ADJUSTMENTS

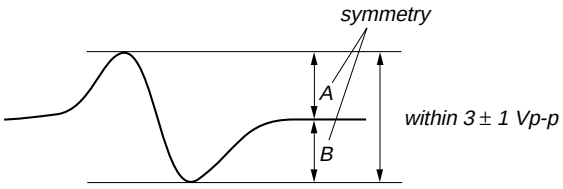
Note:
1. CD Block is basically designed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use an oscilloscope with more than 10MΩ impedance.
4. Clean the object lens by an applicator with neutral detergent when the signal level is low than specified value with the following checks.

S-Curve Check



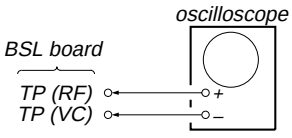
Procedure:
1. Connect the test point TP (ADJ) on MAIN board to the ground with a lead wire on MAIN board.
2. Connect oscilloscope to test point TP (FE) on BSL board.
3. Turned Power switch on to set ADJ mode by TIMER SW OFF.
4. Put disc (YEDS-18) in and turned Power switch on again and actuate the focus search. (actuate the focus search when disc table is moving in and out.)
5. TIMER SW ON.
6. Press the "1" button (s-cuve observe mode).
7. Check the oscilloscope waveform (S-curve) is symmetrical between A and B. And confirm peak to peak level within 3 ± 1 Vp-p.

S-curve waveform



Note: • Try to measure several times to make sure that the ratio of A:B or B:A is more than 10:7.
• Take sweep time as long as possible and light up the brightness to obtain best waveform.

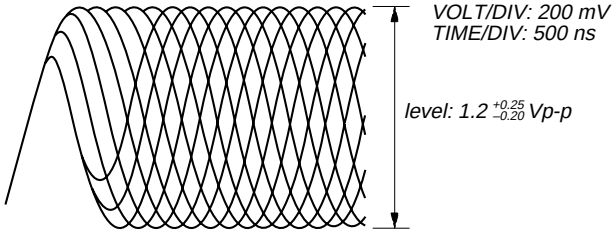
RF Level Check



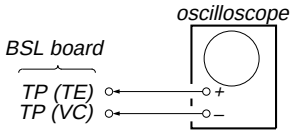
Procedure:
1. Connect oscilloscope to test point TP (RF) on BSL board.
2. Turned Power switch on.
3. Put disc (YEDS-18) in to play the number five track.
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

Note: A clear RF signal waveform means that the shape "◇" can be clearly distinguished at the center of the waveform.

RF signal waveform

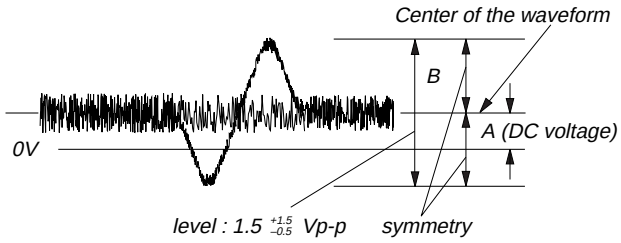


E-F Balance (1 Track Jump) Check

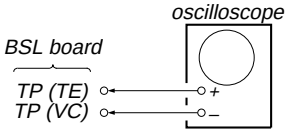


Procedure:
1. Connect oscilloscope to test point TP (TE) on BSL board.
2. Turned Power switch on.
3. Put disc (YEDS-18) in to play the number five track.
4. Press the "❚❚ (Pause)" button. (Becomes the 1 track jump mode)
5. Check the level B of the oscilloscope's waveform and the A (DC voltage) of the center of the Travers waveform.
   Confirm the following :
   A/B × 100 = less than ± 6 (%)

1 track jump waveform

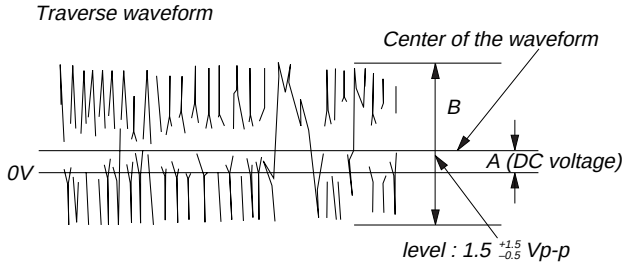


E-F Balance Check

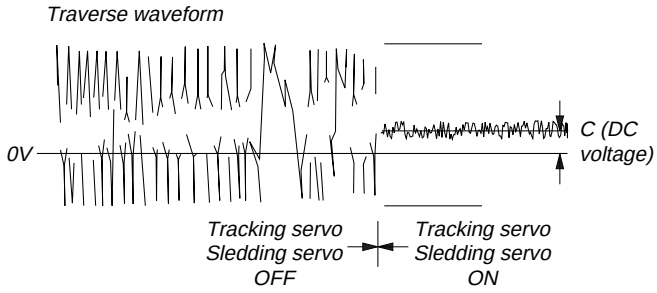


Procedure:
1. Connect the test point TP (ADJ) on MAIN board on the ground with a lead wire on MAIN board.
2. Connect oscilloscope to test point TP (TE) on BSL board.
3. Turn the Power switch on to set the ADJ mode. (TIMER SW OFF)
4. Put disc (YEDS-18) in to play the number five track.
5. Press the "3" button. (The tracking servo and the sledding servo are turned OFF.)

6. Check the level B of the oscilloscope's waveform and the A (DC voltage) of the center of the Traverse waveform.
   Confirm the following:
   A/B × 100 = less than ± 6 (%)



7. Press the "8" button. (The tracking servo and sledding servo are turned ON.) Confirm the C (DC voltage) is almost equal to the A (DC voltage) is step 6.

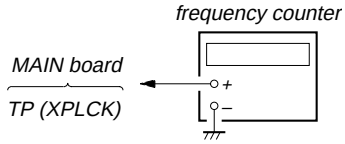


8. Disconnect the lead wire of TP (ADJ) connected in step 1.

RF PLL Free-run Frequency Check

Procedure:

1. Connect frequency counter to test point (XPLCK) with a lead wire.



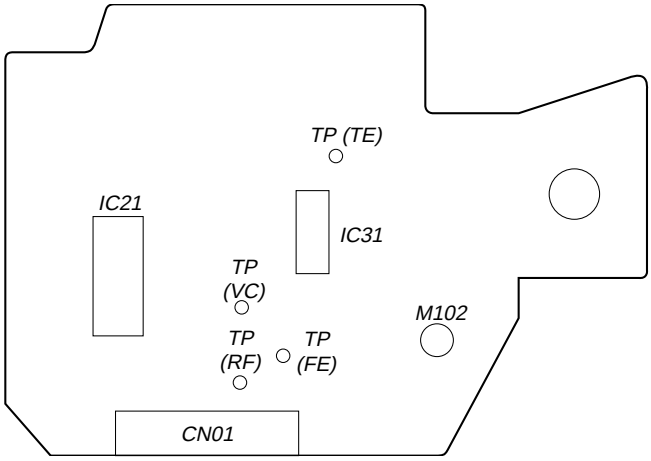
2. Turned Power switch on.
3. Put the disc (YEDS-18) in to play the number five track.
   Confirm that reading on frequency counter is 4.3218 MHz.

Balance Level Adjustment

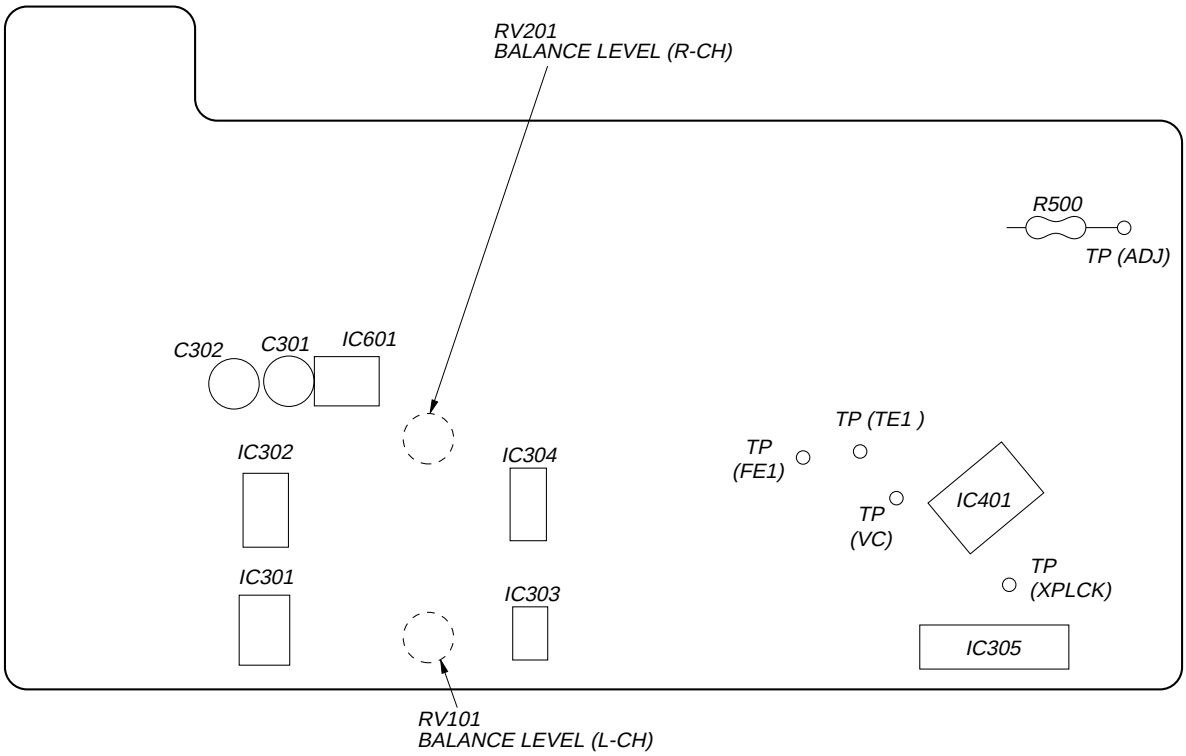
(Generally it does not need to adjust because it has alredy adjusted before shipping.)

1. Turn on the disc (YEDS-18) and play the number 2 track (1 kHz 0 dBs)
2. Connect level meter to BALANCE OUT (J304)
3. Adjustment level
   BALANCE OUT: +24 dBs
   RV101 (L-CH)
   RV201 (R-CH)

[BSL BOARD] — Side B —

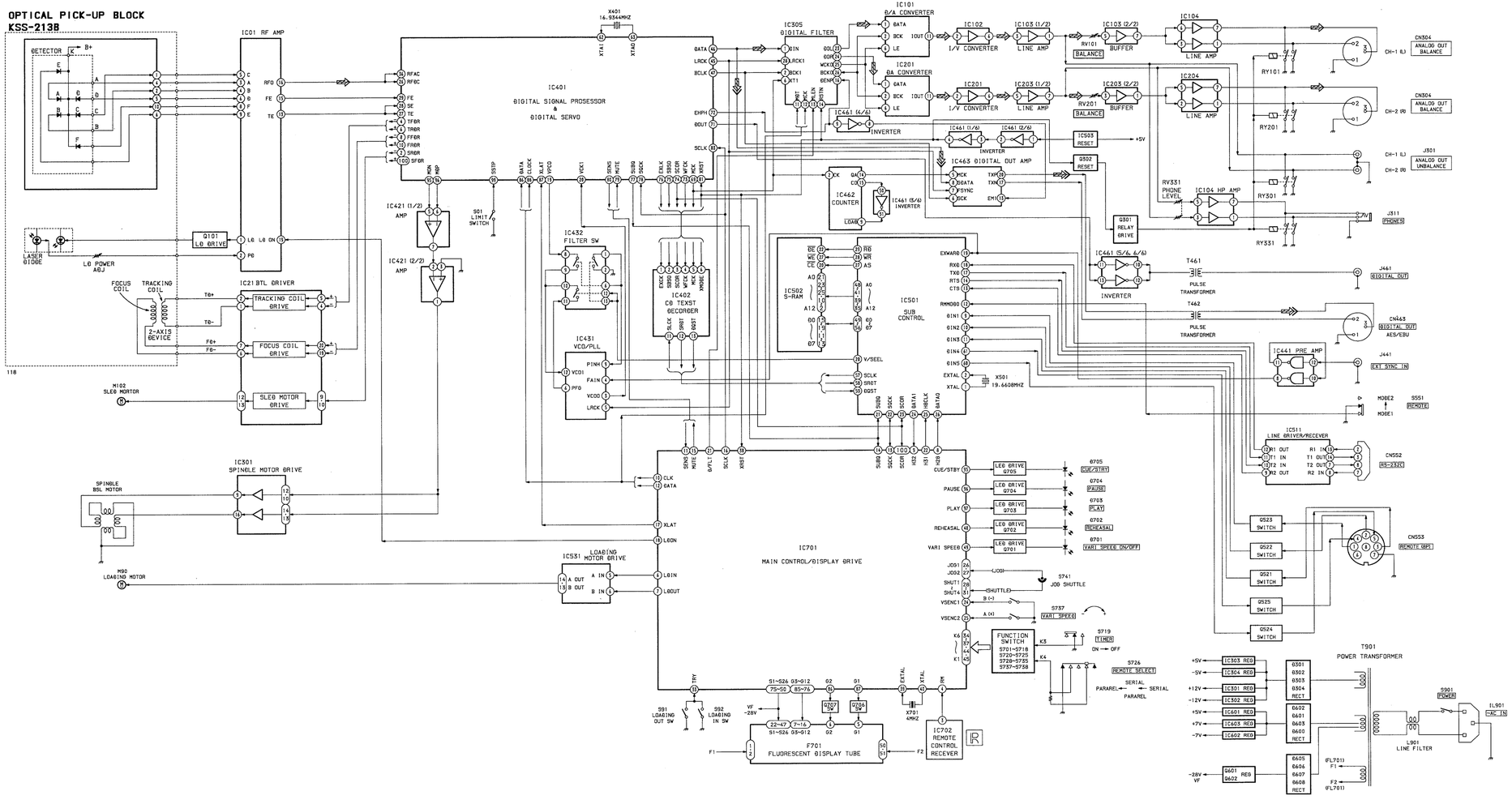


[MAIN BOARD] — Component side —

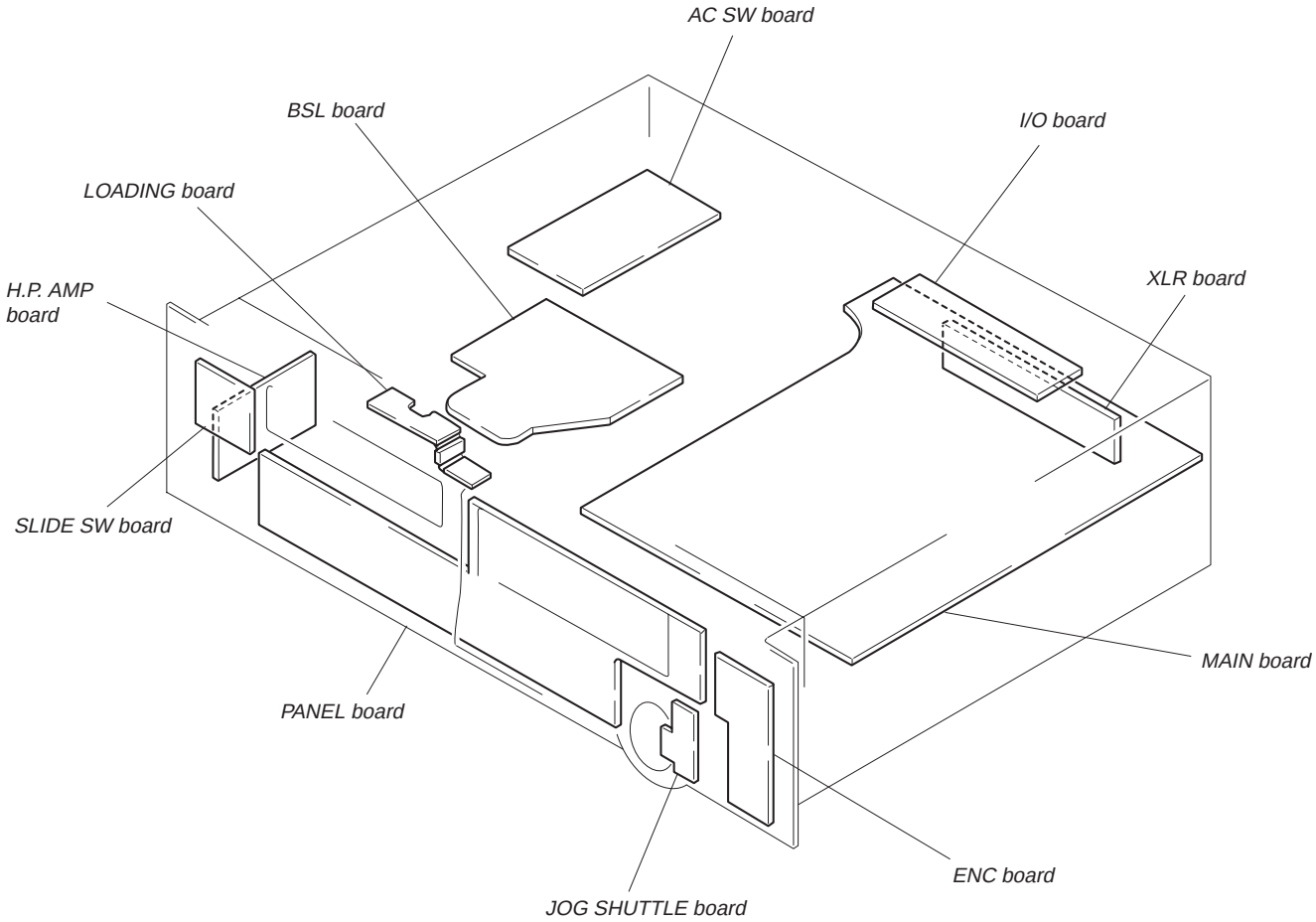


SECTION 6
DIAGRAMS

6-1. BLOCK DIAGRAM

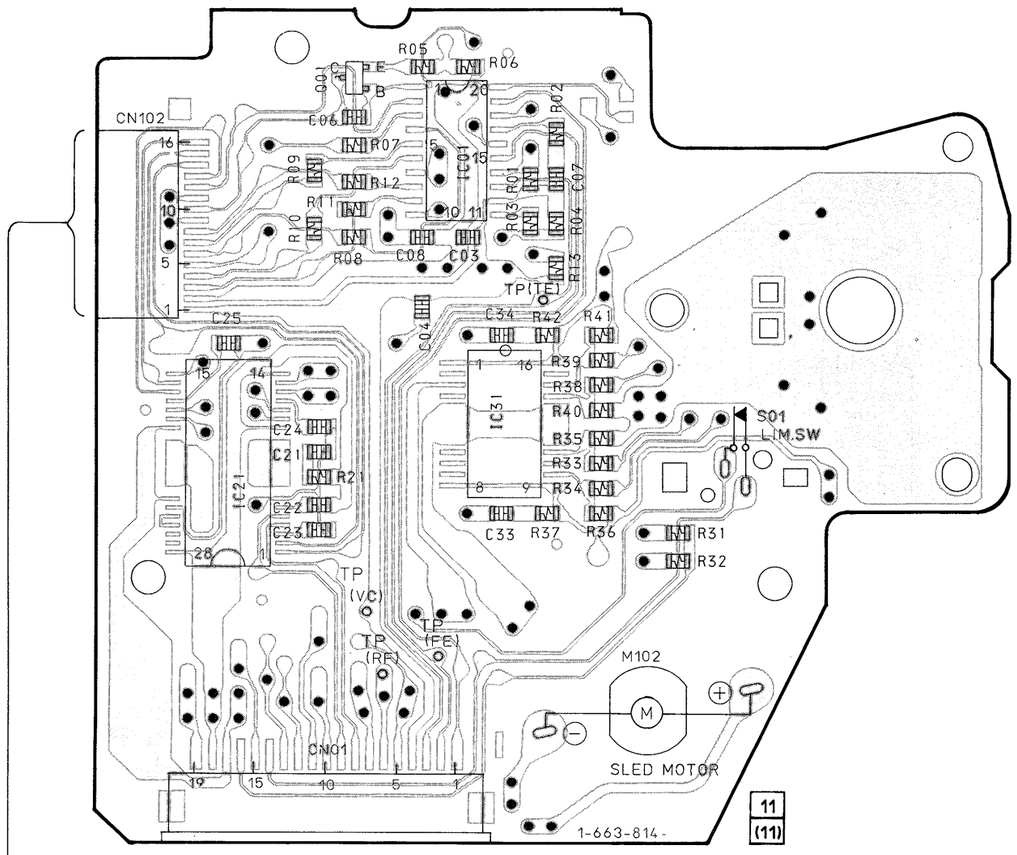


• **Circuit Boards Location**

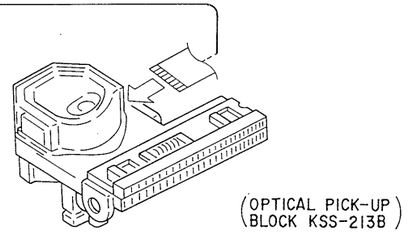


6-2. PRINTED WIRING BOARDS – CD Section –

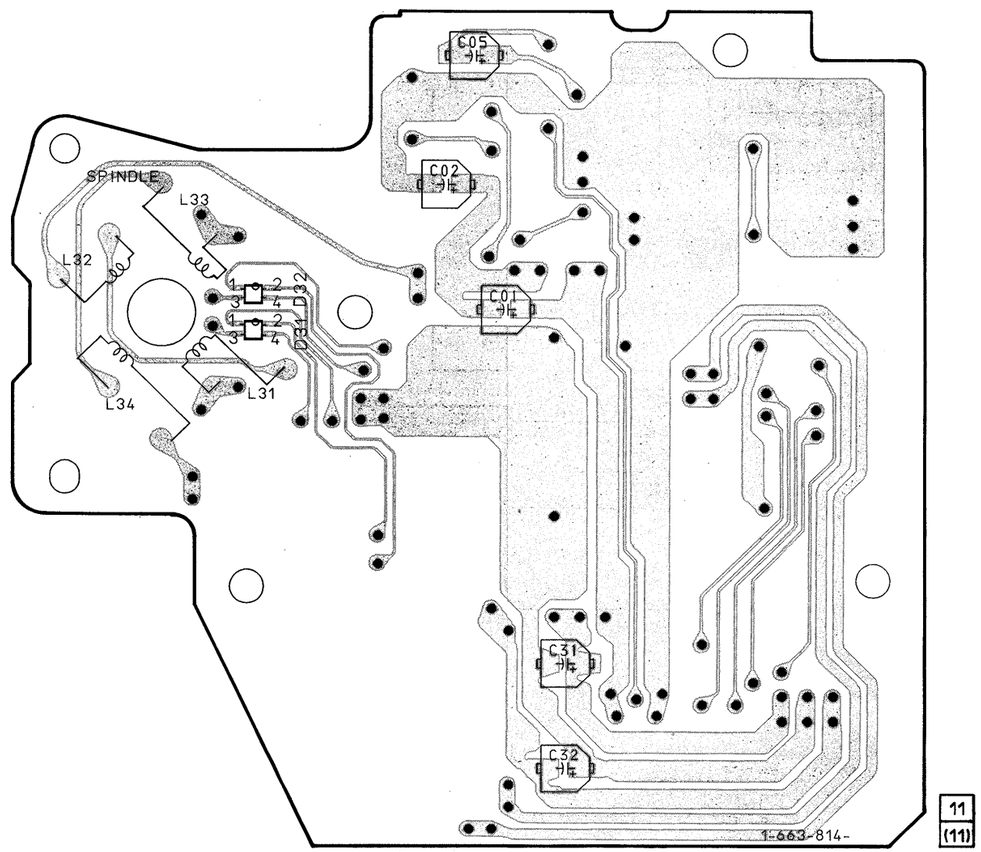
【 BSL BOARD 】 (SIDE B)



C MAIN BOARD (CN401) (Page 30)

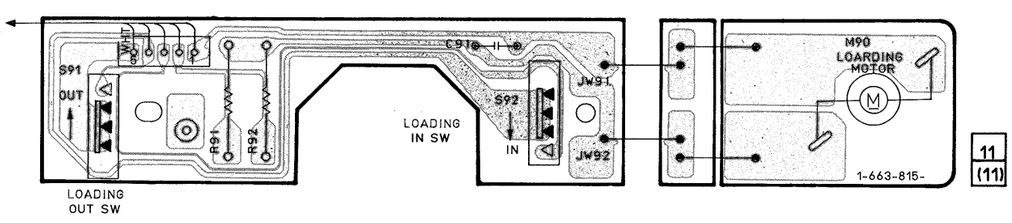


【 BSL BOARD 】 (SIDE A)



MAIN BOARD (CN531) (Page 30) B

【 LOADING BOARD 】



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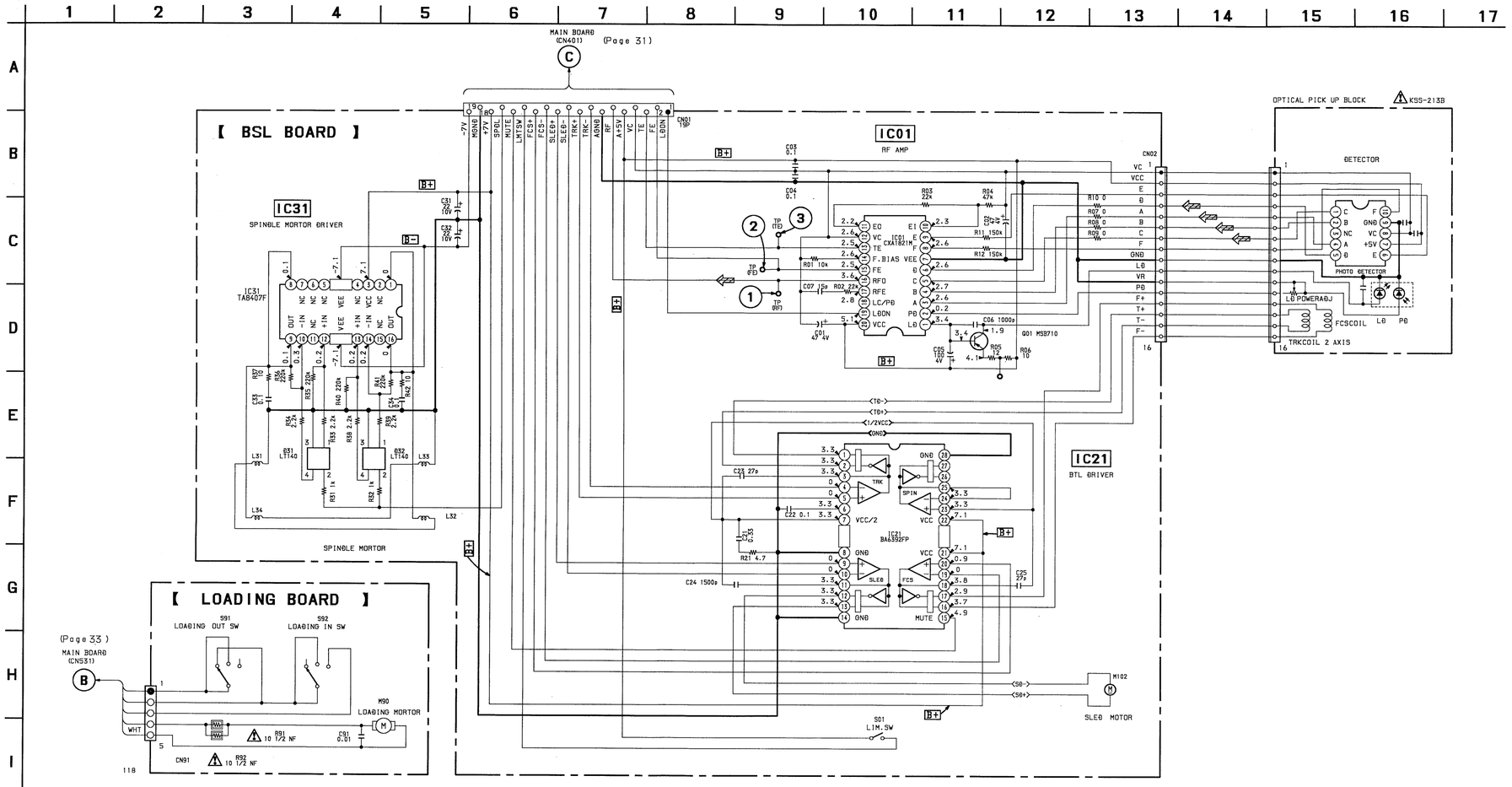
6-3. SCHEMATIC DIAGRAM – CD Section – • See page 43 for IC Block Diagrams.

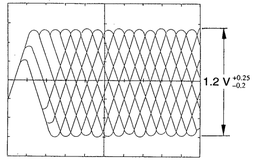


– 25 –

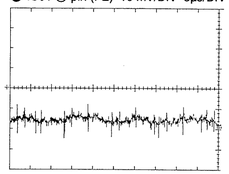
– 26 –

• Waveforms

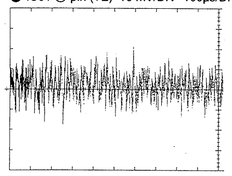
❶ IC01 ⑱ pin (RF)



❷ IC01 ⑲ pin (FE) 10 mV/DIV 5µs/DIV



❸ IC01 ⑳ pin (TE) 10 mV/DIV 100µs/DIV



Note on Schematic Diagram:

- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- : nonflammable resistor.

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. ne les remplacer que par une piéce portant le numéro spécifié.

- B+ : B + Line.
- B− : B – Line.
- Voltages and waveforms are dc with respect to ground in playback mode. no mark : CD
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path. ⇨ : CD

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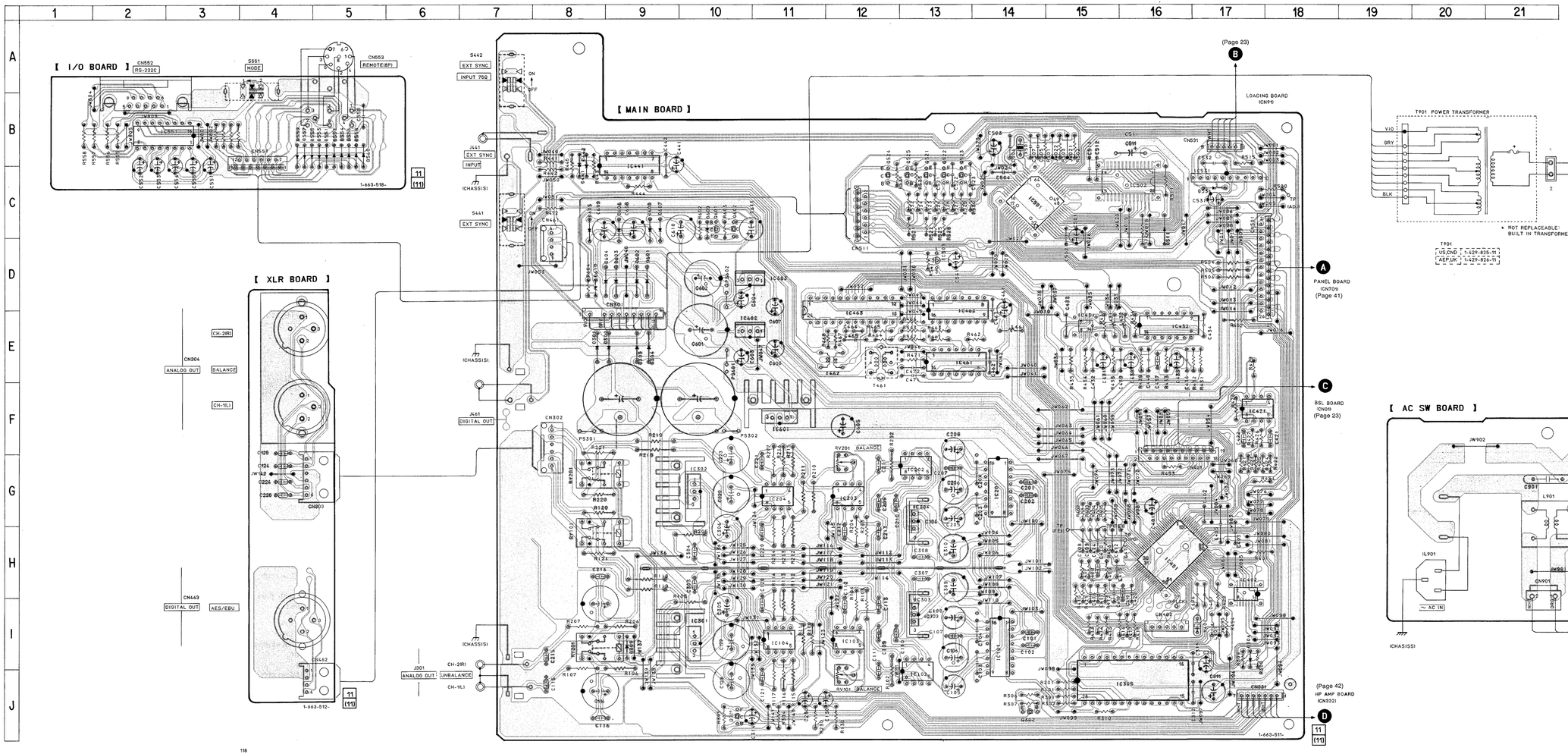
6-4. PRINTED WIRING BOARDS – MAIN Section –

• See page 22 for Circuit Boards Location.



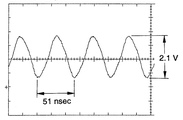
• Semiconductor Location

Ref. No.	Location	Ref. No.	Location
D301	E-8	IC202	G-13
D302	E-9	IC203	G-12
D303	E-9	IC204	G-11
D304	E-9	IC301	I-10
D305	I-9	IC302	G-10
D306	I-17	IC303	I-13
D441	C-8	IC304	G-13
D442	C-8	IC305	J-16
D511	C-16	IC401	H-16
D531	C-17	IC402	H-17
D551	B-5	IC421	F-17
D552	B-5	IC431	E-15
D553	B-5	IC432	E-16
D554	B-5	IC441	C-9
D555	B-4	IC461	E-13
D556	B-5	IC462	E-13
D557	B-4	IC463	E-12
D558	B-5	IC501	C-14
D559	B-4	IC502	C-16
D560	B-5	IC503	D-13
D601	D-9	IC531	C-17
D602	D-9	IC551	B-2
D603	D-9	IC601	F-11
D604	D-8	IC602	E-10
D605	C-8	IC603	D-10
D606	C-9		
D607	C-9	Q301	J-10
D608	C-9	Q302	J-14
D609	C-10	Q521	C-13
D610	D-8	Q522	C-13
		Q523	C-13
IC101	I-14	Q524	C-12
IC102	J-13	Q525	C-13
IC103	I-12	Q601	C-10
IC104	I-11	Q602	C-10
IC201	G-14		

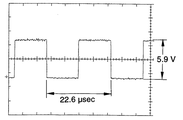
Note:

- ——— : parts extracted from the component side.
- ▒▒▒ : Pattern of the rear side.
- Abbreviation
  CND: Canadian model.

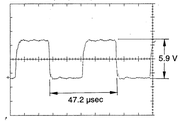
❶ IC501 ① pin



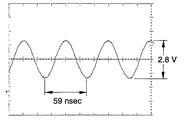
❷ IC401 ㉘ pin



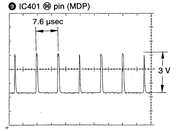
❸ IC401 ㉙ pin (BCLK)



❹ IC401 ㉚ pin



❺ IC401 ㉜ pin (MDP)

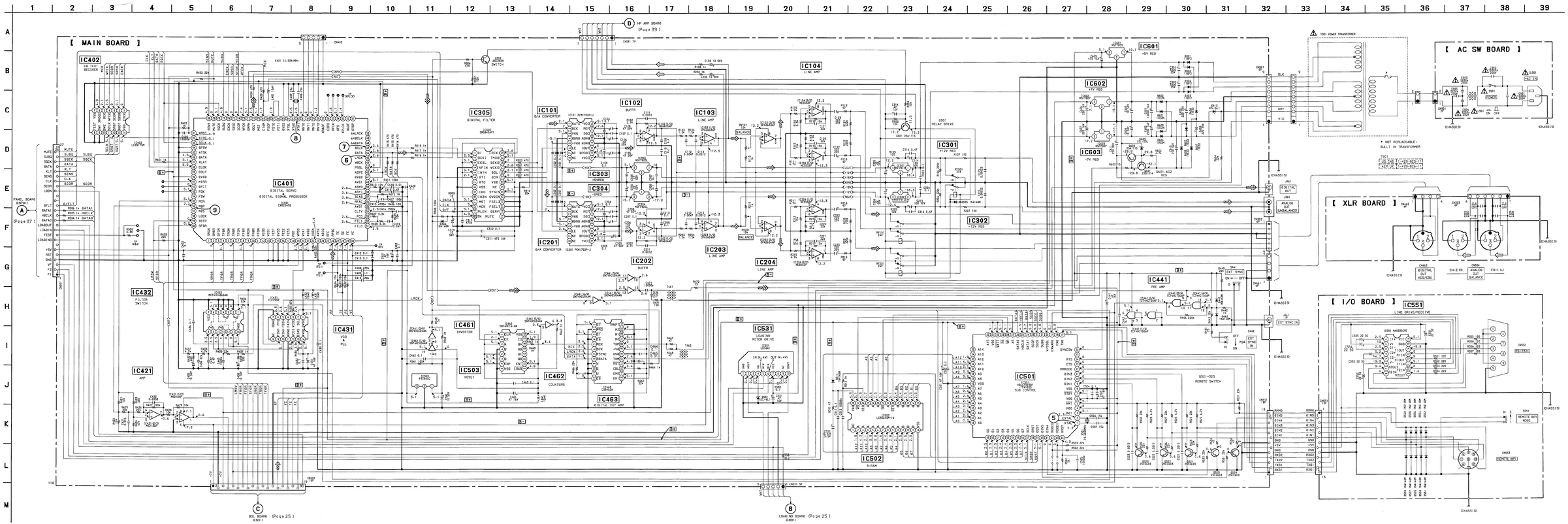


Note:
- All capacitors are in µF unless otherwise noted. pF: µµF
  50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- ▭ : panel designation.

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. ne les remplacer que par une pièce portant le numéro spécifié.

- B+ : B+ Line.
- B− : B − Line.
- Voltages and waveforms are dc with respect to ground in playback mode.
  no mark : CD
  ( ) : OPEN, CLOSE
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : CD
  ⇛ : digital out
- Abbreviation
  CND: Canadian model.

6-5. SCHEMATIC DIAGRAM – MAIN Section – • See page 43 for IC Block Diagrams.



6-6. SCHEMATIC DIAGRAM – PANEL Section –

【 PANEL BOARD 】

【 HP AMP BOARD 】

【 SLIDE SW BOARD 】

【 JOG SHUTTLE BOARD 】

【 ENC BOARD 】

IC701 CXP85222-045Q
DISPLAY DRIVE
MAIN CONTROL

IC702 NJL5204D0

FL701
FLUORESCENT DISPLAY TUBE

IC331 NJM4580D
HP AMP

MAIN BOARD (CN3331) (Page 32)

MAIN BOARD (CN501) (Page 31)

IC701 ⊛ pin
5.7 V
248 nsec

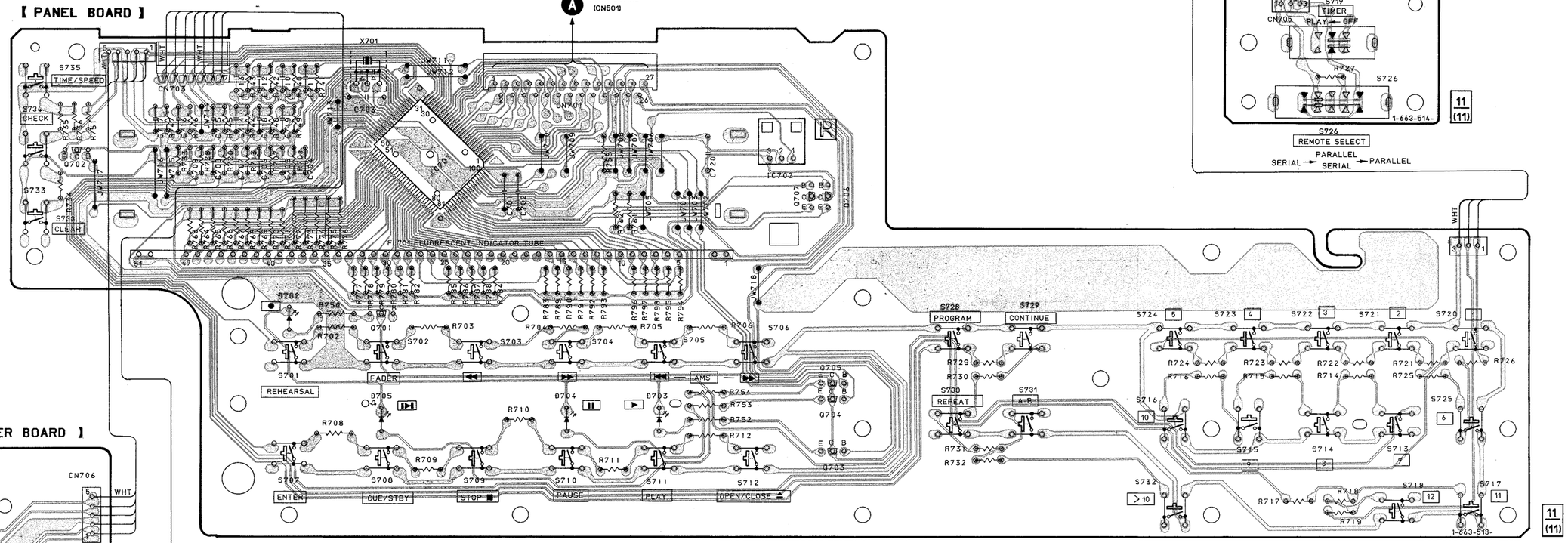
Note:
- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantaliums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- △ : internal component.
- ⚠ : nonflammable resistor.
- ▭ : panel designation.

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

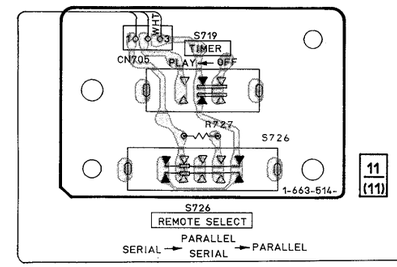
- B+ : B+ Line.
- Voltages and waveforms are dc with respect to ground in playback mode. no mark : CD
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circuit numbers refer to waveforms.
- Signal path. ⇨ : CD

6-7. PRINTED WIRING BOARDS – PANEL Section – • See page 22 for Circuit Boards Location.

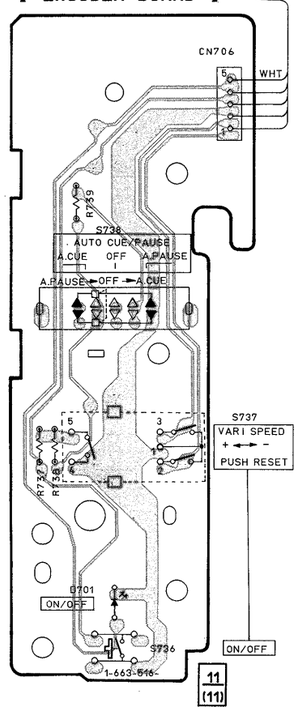
【 PANEL BOARD 】



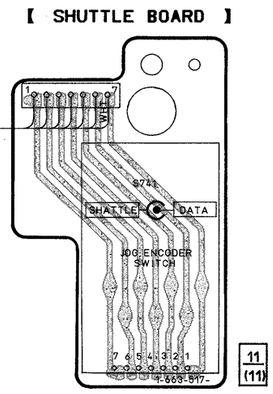
【 SLIDE SW BOARD 】



【 ENCODER BOARD 】



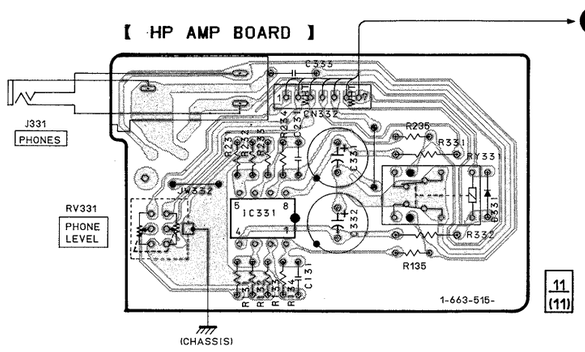
【 SHUTTLE BOARD 】



• **Semiconductor Location**

Ref. No.	Location
D331	H-13
D701	I-2
D702	D-4
D703	E-7
D704	E-7
D705	E-5
IC331	H-11
IC701	B-5
IC702	B-9
Q701	D-5
Q702	B-2
Q703	E-9
Q704	E-9
Q705	D-9
Q706	C-9
Q707	C-9

【 HP AMP BOARD 】



Note:
- ○—— : parts extracted from the component side.
- ▒▒▒ : Pattern of the rear side.

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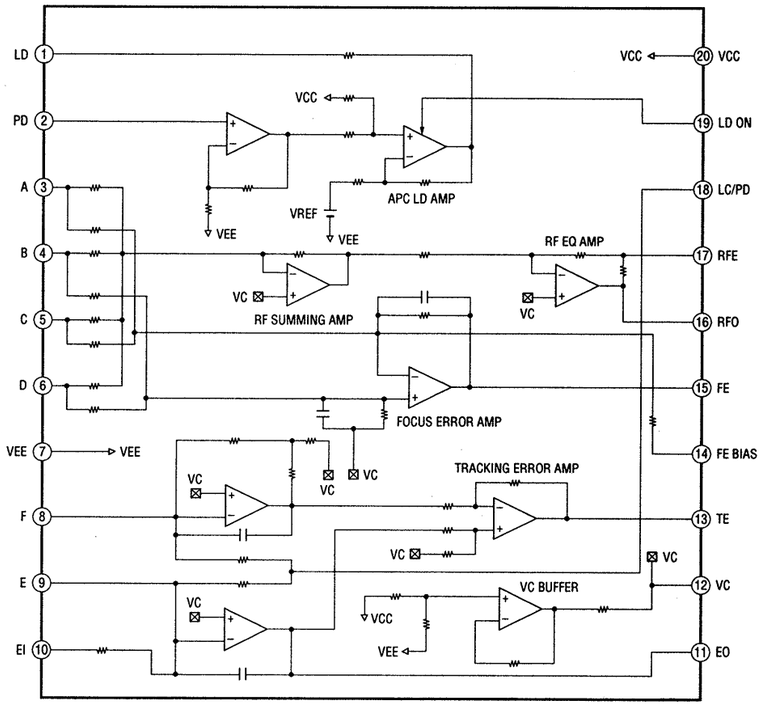
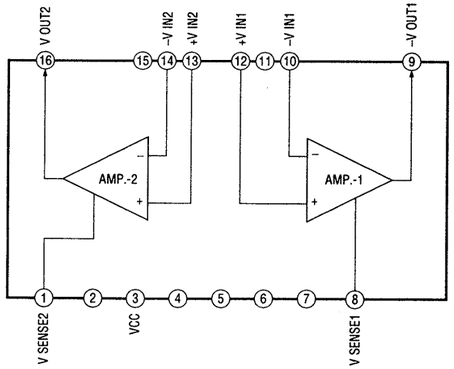
• IC Block Diagrams

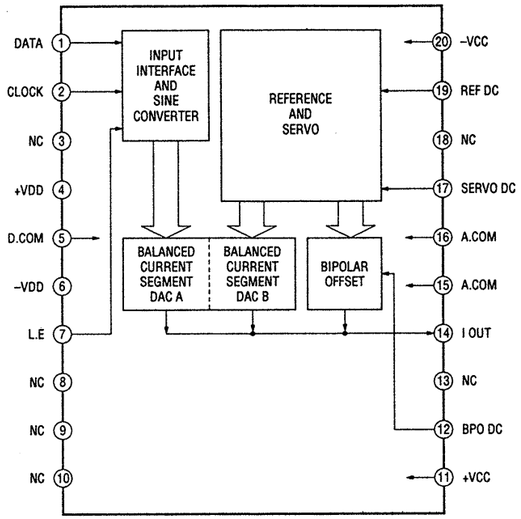
IC01 CXA1821M-T6



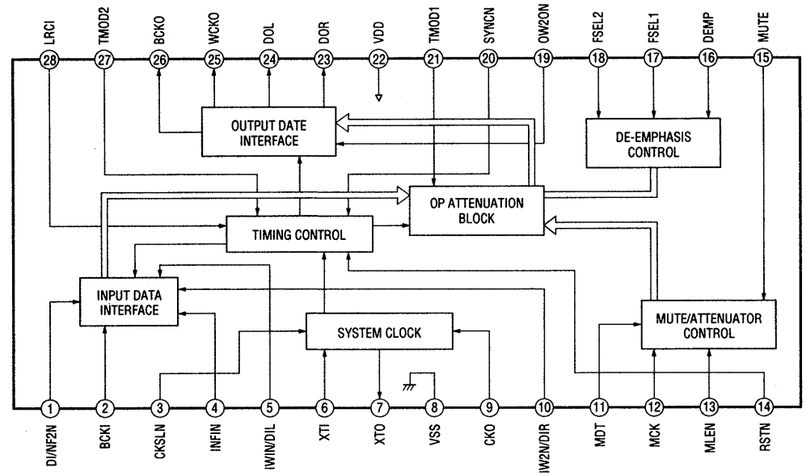
IC31 TA8407F (EL)



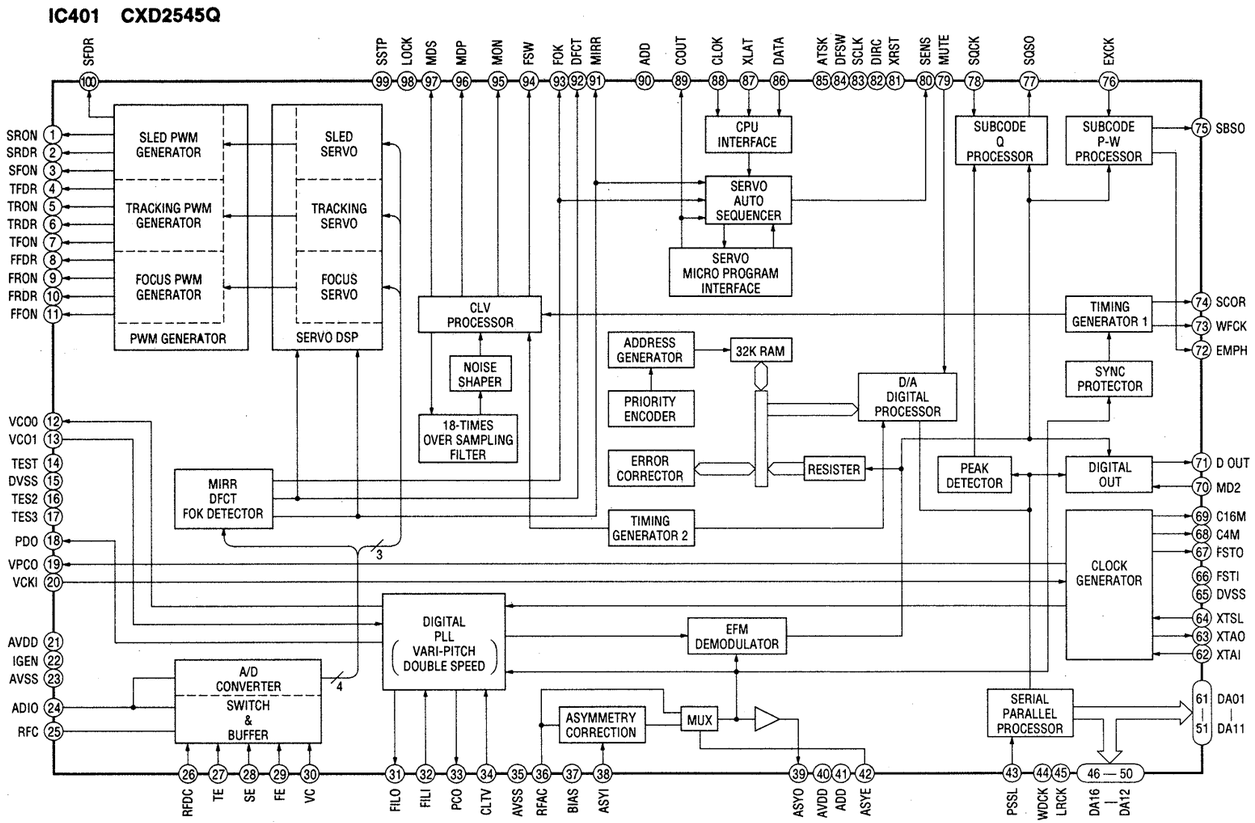
IC101, 201 PCM1702P-J



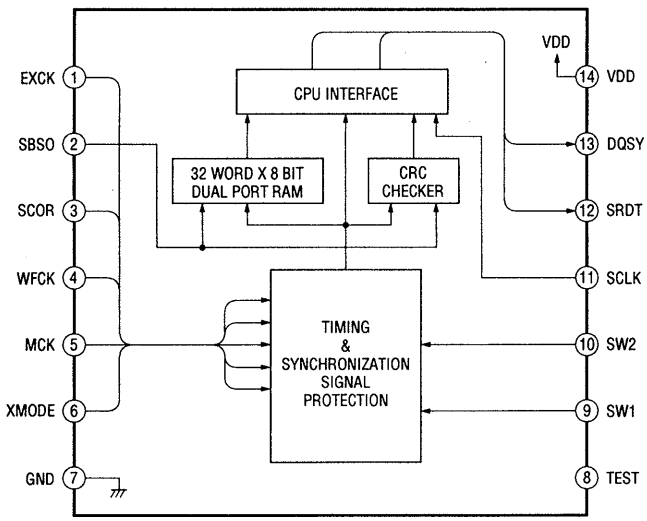
IC305 SM5843AP1



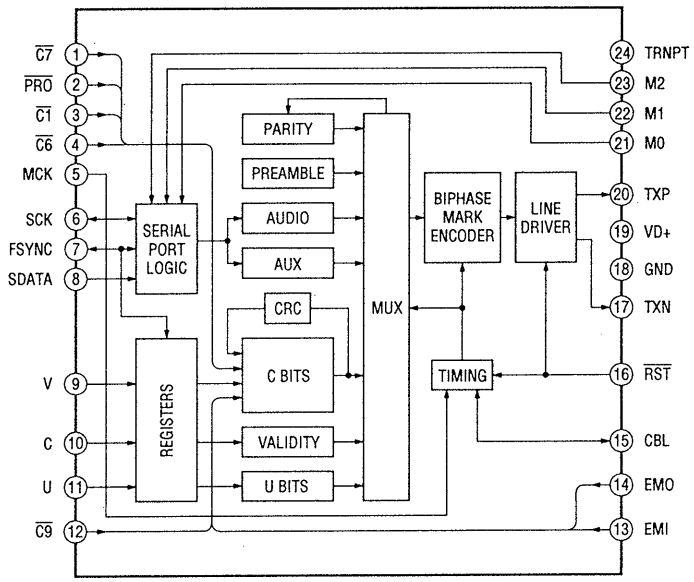
IC401 CXD2545Q



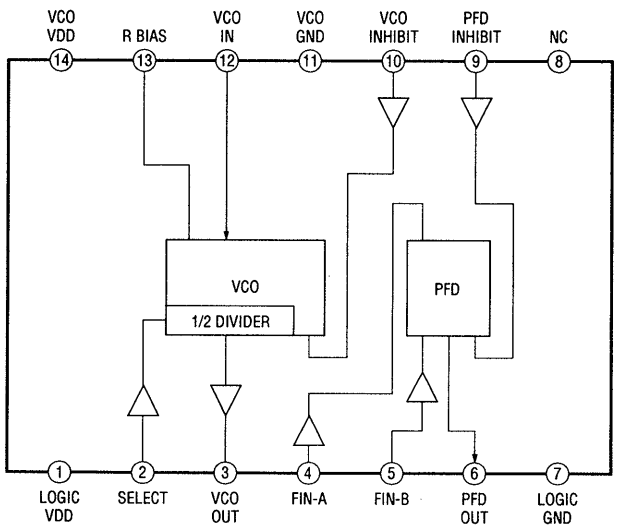
IC402 LC89170M



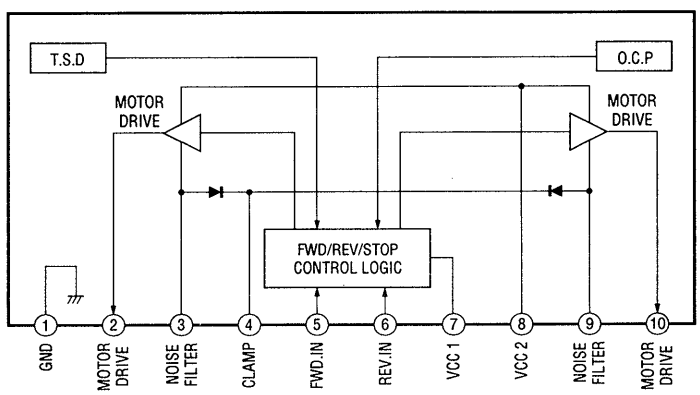
IC463 CS8402A



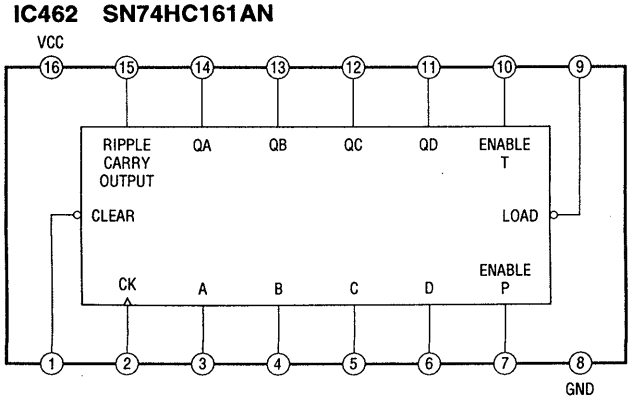
IC431 TLC2932IPW



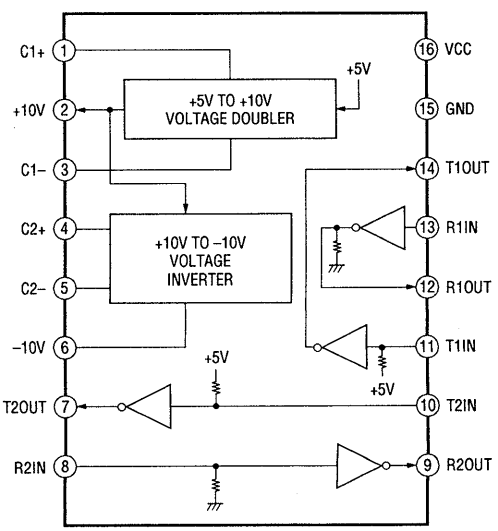
IC531 LB1641



IC462 SN74HC161AN



IC551 MAX232N



6-8. IC PIN FUNCTION DESCRIPTION

MAIN BOARD IC501 HD6473238F-TTX1025 (SUB CONTROL)

Pin No.	Pin Name	I/O	Function
1	XTAL	O	Clock (19.6608 MHz)
2	EXTAL	I	
3	MD1	I	Mode select
4	MD0	I	Mode select
5	$\overline{\text{NMI}}$	I	Connected ground
6	VDD	–	+5V power supply
7	$\overline{\text{STBY}}$	I	Connected VDD (+5V)
8	VSS	–	Ground
9-11	DIN1-DIN3	I	Parallel remote control input
12	RM MODE	I	Parallel remote control mode select
13	CTS	I	Serial remote control enable transmitter
14	RTS	O	Serial remote control enable receive
15	–	–	Not used (open)
16	SYNC SW	I	EXT SYNC ON/OFF SWITCH detection
17	TXD	O	Serial remote control output
18	RXD	I	Serial remote control input
19	EXWARD	I	EXT SYNC frequency detection
20	V/S SEL	O	VARI SPEED and EXT SYNC filter select
21	SUBQ	I	Subcode Q data input from main µ-COM
22	SQCK	I	Subcode Q clock input from main µ-COM
23	SCOR	I	Subcode Q interrupt input from DSP
24	DATA1	O	Data output to main µ-COM
25	H8 CLK	I	Clock input from main µ-COM
26	DATA 0	I	Data input from main µ-COM
27	AS	O	Address strobe of S-RAM
28	$\overline{\text{WR}}$	O	Write enable output
29	$\overline{\text{RD}}$	O	Read enable output
30	$\overline{\text{WAIT}}$	I	Connected ground
31	VDD	–	+5V power supply
32-34	–	–	Not used (open)
35-39	A12-A18	O	S-RAM address appoint port
40	VSS	–	Ground
41-48	A7-A0	O	S-RAM address appoint port
49-56	D0-D7	I/O	S-RAM data read and write port
57	SCLK	O	CD text data clock output to S-RAM
58	SRDT	I	CD text data input from S-RAM
59	DQST	I	CD text interrupt input from S-RAM
60, 61	DIN5, DIN4	O	Parallel remote control output
62	MODE 0	I	Move mode select input
63	MODE 1	I	Move mode select input
64	XRST	I	Reset input

PANEL BOARD IC701 CXP82220-049Q (DISPLAY DRIVE, CONTROL)

Pin No.	Pin Name	I/O	Function
1	–	O	Not used (open)
2	–	O	Pull up terminal
3	–	O	Not used (open)
4	RM	I	Remote receive input
5	–	O	Not used (open)
6	LD IN	O	Load in signal output
7	LD OUT	O	Load out signal output
8	H28	O	Data output to sub µ-COM
9	H32	I	Data input from sub µ-COM
10	CLK	O	Serial clock output to DSP. DIGFIL
11	SENS	I	Sens input from DSP
12	DATA	O	Serial data output to DSP. DIGFIL
13	SQCK	O	Subcode Q read out clock output
14	SUBQ	I	Subcode Q data input from DSP
15	A MUTE	O	Mute switch output (“H” mute ON)
16	SCLK	O	Not used (open)
17	XLAT	O	Serial data latch output to DSP
18	LD ON	O	Laser diode ON output
19, 20	NC2, NC1	–	Not used (open)
21	D/FLT	O	Latch clock output to DIGFIL
22	H31	O	Clock output to sub µ-COM
23	–	O	Not used (open)
24	VSENC2	I	VARI SPEED rotary encoder input
25	VSENC 1	I	VARI SPEED rotary encoder input
26, 27	JOG1, JOG2	I	Data rotary encoder input
28-31	SHUT1-SHUT4	I	Jog shuttle input
32	TEST	I	Test terminal
33	TRY	I	Loading IN/OUT switch input
34-37	K6-K3	I	Key input
38	XRST	I	Reset input
39	EXTAL	I	Clock (4 MHz)
40	XTAL	O	
41	VSS	–	Ground
42, 43	TX, TEX	O	Not used (open)
44, 45	K2, K3	I	Key input
46	AVREF	–	Connected +5V power supply
47	AVSS	–	Ground
48	REHEARSAL	O	REHEASAL LED drive output
49	VARI SPEED	O	VARI SPEED LED drive output
50-75	S26-S1	O	FL display segment output
76-87	G12-G1	O	FL display grid output
88	VFDP	–	FL display power supply
89	VDD	–	+5V power supply

Pin No.	Pin Name	I/O	Function
90	NC	–	Connected +5V VDD
91	VSS	–	Ground
92-94	–	O	Not used (open)
95	CUE/STBY	O	CUE/STBY LED drive output
96	PAUSE	O	Pause LED drive output
97	PLAY	O	Play LED drive output
98, 99	–	–	Not used (open)
100	SCOR	I	Subcode Q interrupt input from DSP

SECTION 7
EXPLODED VIEWS

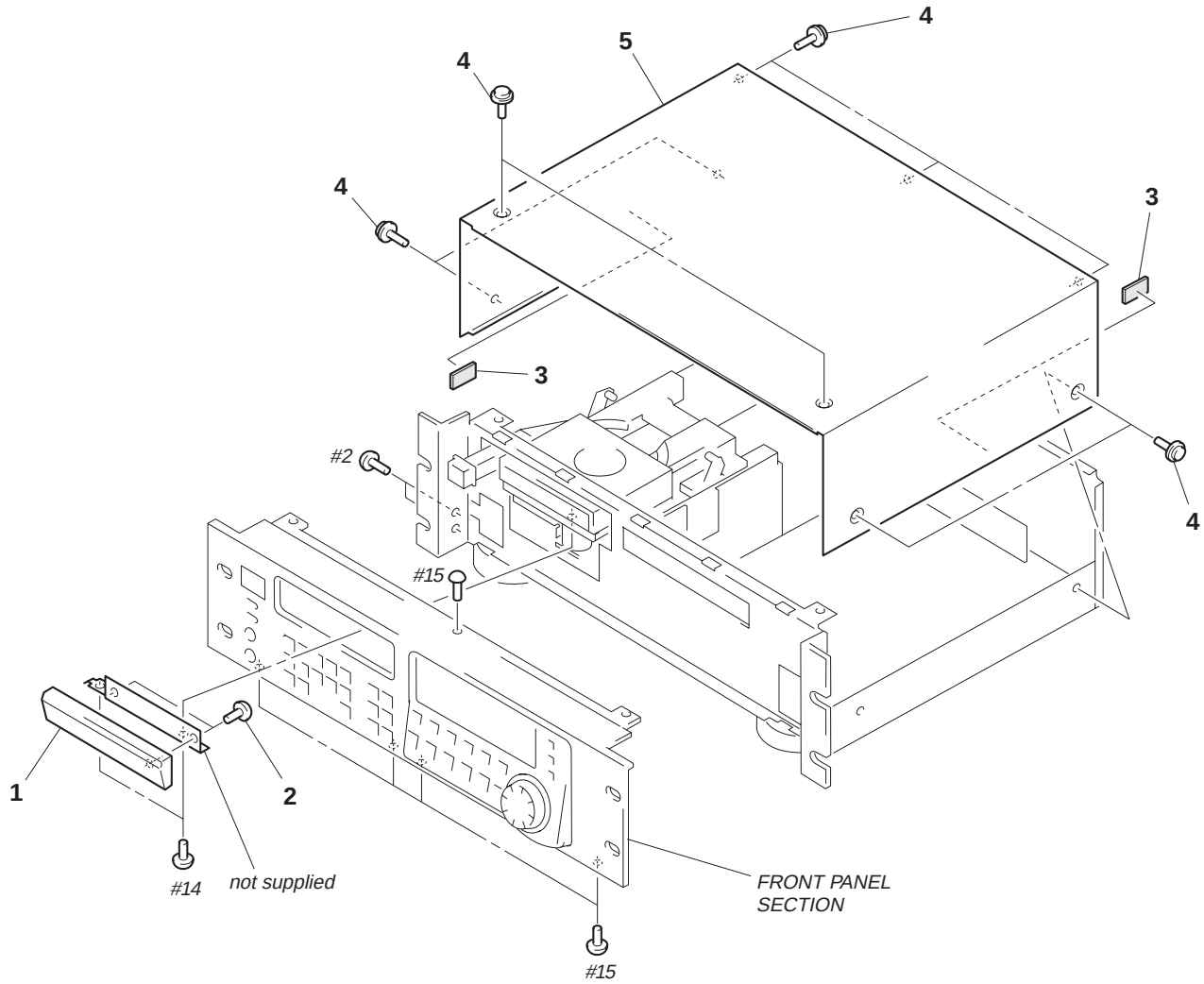
NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearrance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of the electrical parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

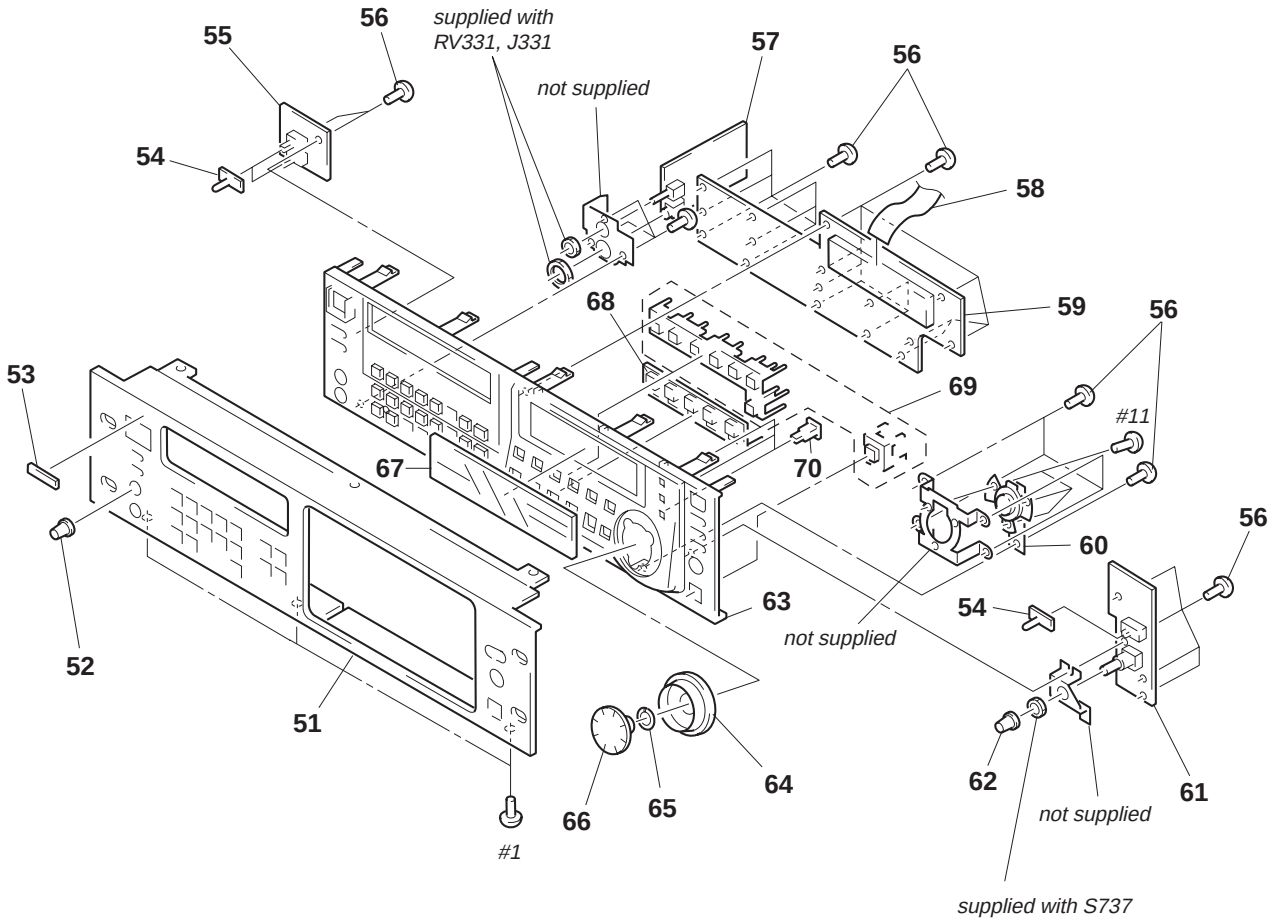
Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le neméro spécifié.

(1) CASE, LOADING PANEL SECTION



Ref. No.	Part No.	Description	Remark
1	4-986-214-01	PANEL, LOADING	
2	4-951-620-01	SCREW (2.6X8), +BVTP	
* 3	4-951-532-01	CUSHION	
4	3-704-366-21	SCREW (CASE) (M3X10)	
* 5	4-986-210-01	CASE	

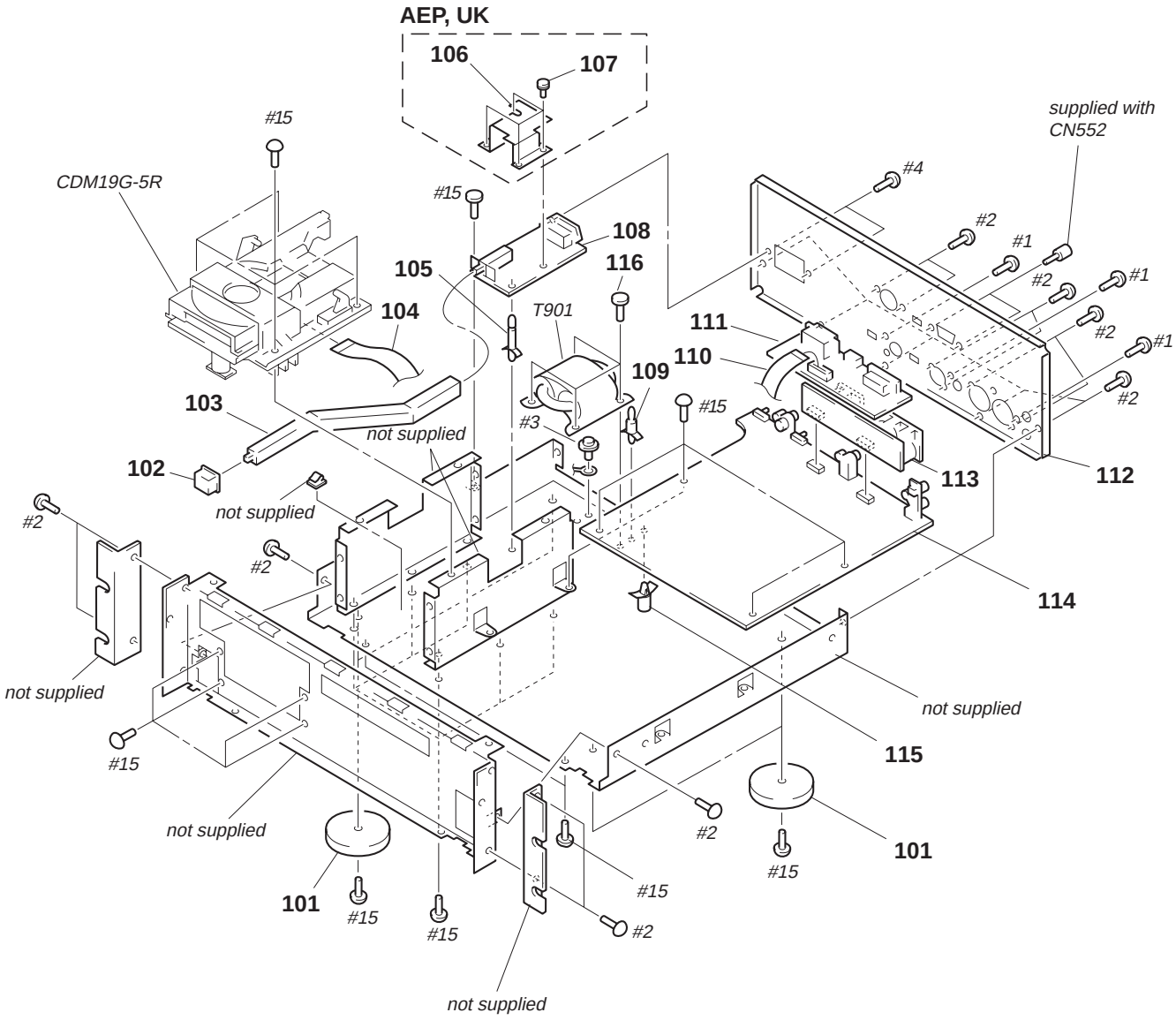
(2) FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remark
51	4-986-208-01	PANEL, FRONT	
52	X-4947-852-1	KNOB (1) ASSY	
53	4-908-848-31	EMBLEM, SONY	
54	3-917-216-31	KNOB (TIMER)	
* 55	1-663-514-11	SLIDE SW BOARD	
56	4-951-620-01	SCREW (2.6X8), +BVTP	
* 57	1-663-515-11	H.P AMP BOARD	
58	1-773-252-11	WIRE (FLAT TYPE) (27 CORE)	
* 59	A-4699-402-A	PANEL BOARD, COMPLETE	
* 60	1-663-517-11	JOG SHUTTLE BOARD	

Ref. No.	Part No.	Description	Remark
* 61	1-663-516-11	ENC BOARD	
62	X-4947-851-1	KNOB (0) ASSY	
63	X-4947-764-1	BASE ASSY, PANEL	
64	4-983-619-11	RING, SHUTTLE	
65	3-354-981-01	SPRING (SUS), RING	
66	4-983-620-01	DIAL, JOG	
67	4-986-398-01	WINDOW, INDICATION	
68	4-986-220-01	BUTTON (PLAY) (⏏.▶.❚❚.■. ❙▶❙)	
69	4-986-217-01	BUTTON (AMS) (❙◀◀ .▶▶❙.◀◀.▶▶.●)	
70	4-986-218-01	BUTTON (3 KEY)	

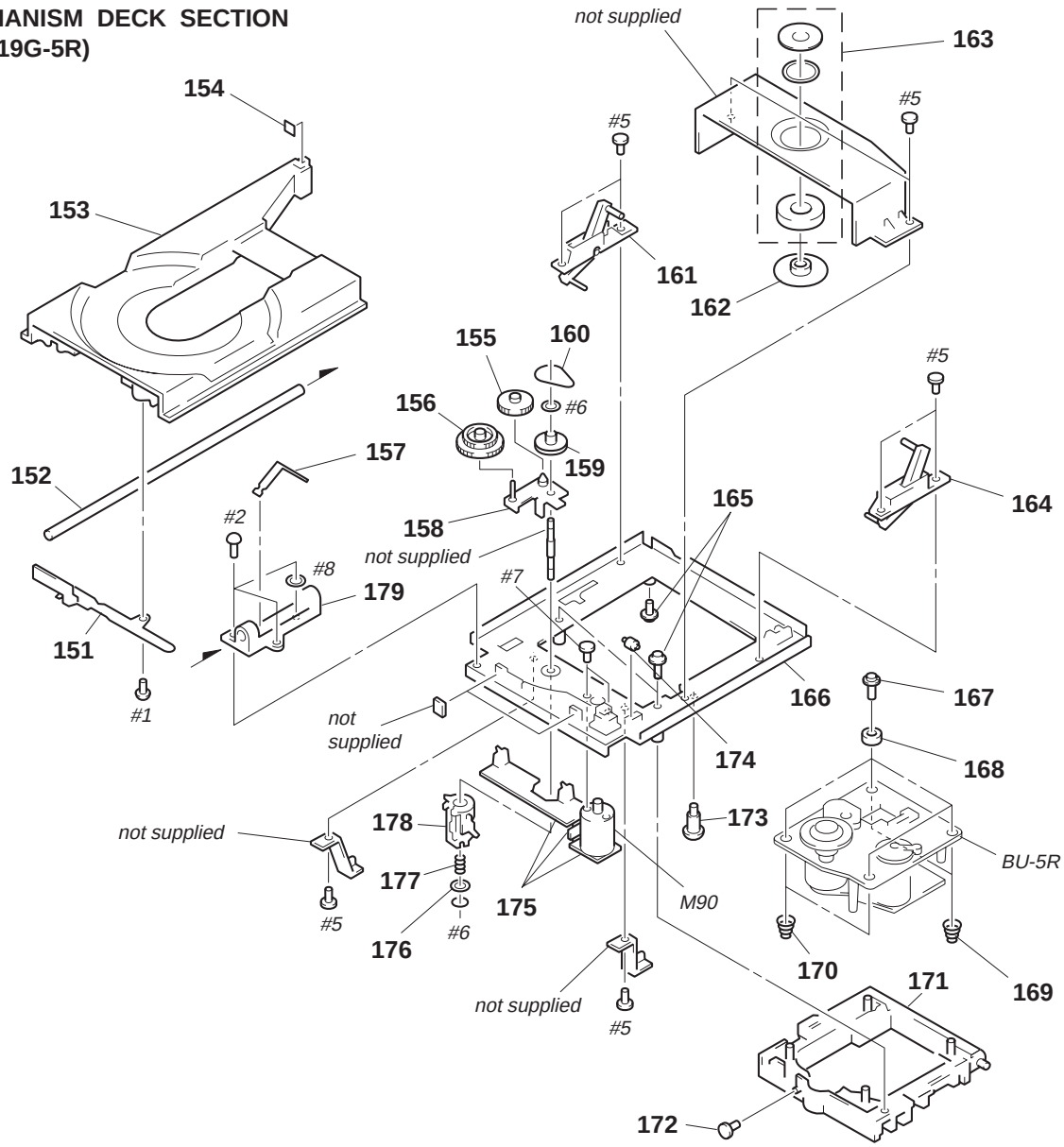
(3) CHASSIS SECTION



Ref. No.	Part No.	Description	Remark
101	4-956-885-01	FOOT (F58175S2W)	
102	4-923-520-71	KNOB, POWER	
* 103	4-986-225-01	LEVER (POWER)	
104	1-773-119-11	WIRE (FLAT TYPE) (19 CORE)	
105	4-924-098-81	HOLDER, PC BOARD	
106	4-988-365-01	COVER (D) (AEP,UK)	
107	4-812-134-11	RIVET (DIA. 3.5), NYLON (AEP,UK)	
* 108	1-663-519-11	AC SW BOARD	
109	4-924-098-11	HOLDER, PC BOARD	
110	1-769-977-11	WIRE (FLAT TYPE) (13 CORE)	
* 111	1-663-518-11	I/O BOARD	
* 112	4-986-212-11	PANEL, BACK (US,Canadian)	
* 112	4-986-212-21	PANEL, BACK (AEP,UK)	
* 113	1-663-512-11	XLR BOARD	
* 114	A-4699-400-A	MAIN BOARD, COMPLETE	
* 115	3-670-570-00	SPACER, SUPPORT	
116	4-381-962-11	SCREW +BVTT 4X8 (S)	
⚠T901	1-429-825-11	TRANSFORMER, POWER (US,Canadian)	
⚠T901	1-429-826-11	TRANSFORMER, POWER (AEP,UK)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le neméro spécifié.

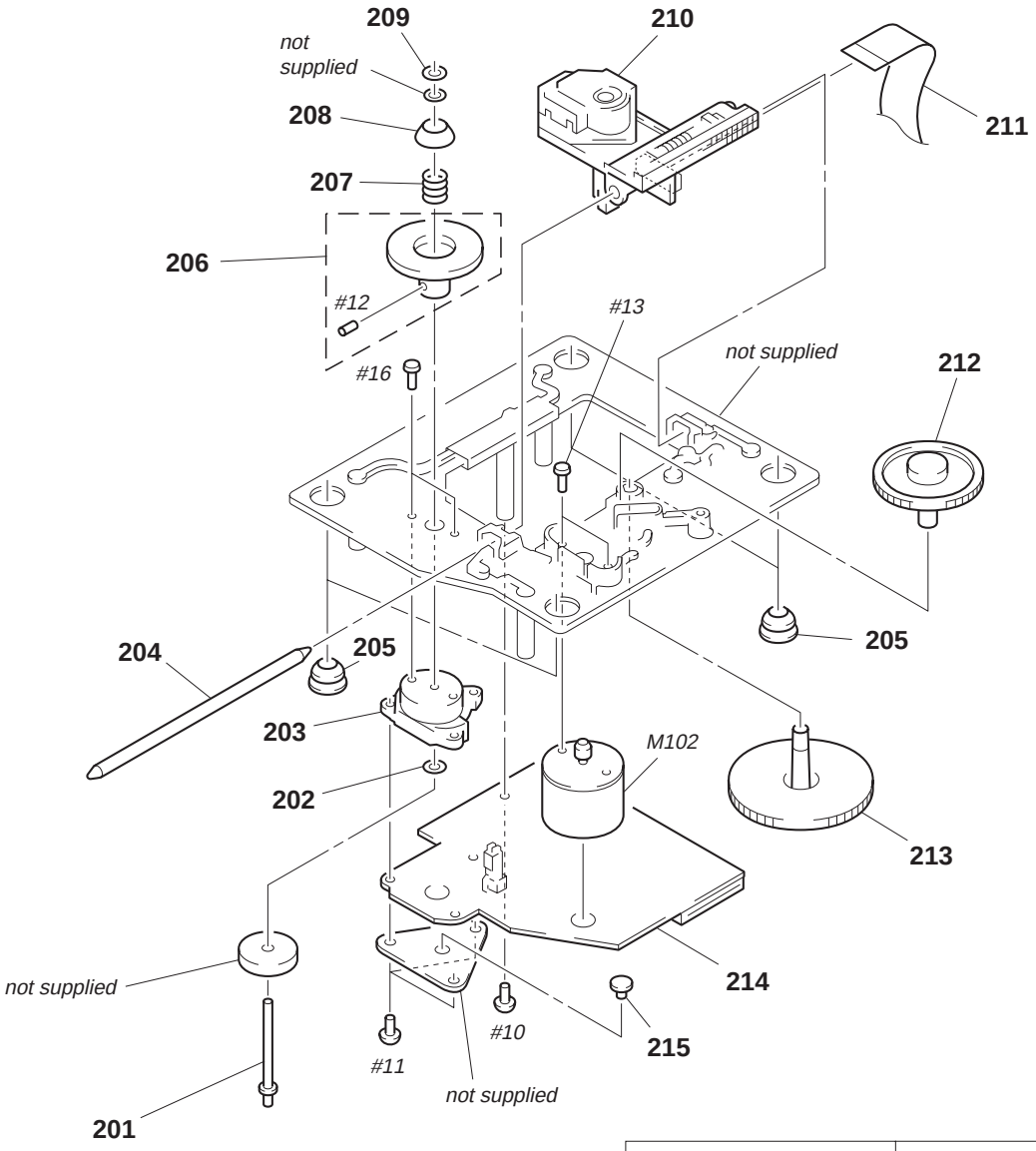
(4) MECHANISM DECK SECTION (CDM19G-5R)



Ref. No.	Part No.	Description	Remark
* 151	4-948-370-01	BRACKET (LOADING PANEL)	
* 152	4-948-368-01	BAR (MAIN), GUIDE	
153	4-948-353-01	TABLE, DISC	
154	9-911-838-XX	RETAINER, CASSETTE	
155	4-927-628-01	GEAR (C)	
156	4-927-620-01	GEAR (P)	
* 157	4-927-648-01	SLIDER (GROUND)	
158	X-4927-608-1	ARM ASSY, SWING	
159	4-929-724-01	PULLEY (B)	
160	4-927-649-01	BELT	
161	A-4604-913-A	LOCK (L) ASSY, STABLE	
162	4-986-506-01	PULLEY, PRESS	
163	A-4665-024-A	MAGNET ASSY	
164	A-4604-914-A	LOCK (R) ASSY, STABLE	
* 165	4-917-583-21	BRACKET, YOKE	

Ref. No.	Part No.	Description	Remark
* 166	4-948-355-05	CHASSIS (OUTSERT)	
167	4-951-620-01	SCREW (2.6X8), +BVTP	
* 168	4-943-119-01	HOLDER (SP)	
169	4-917-541-01	SPRING (B) (PINK)	
170	4-917-572-01	SPRING (B) (BLACK)	
* 171	X-4947-765-1	HOLDER (BU) ASSY	
172	4-927-631-01	ROLLER (L)	
173	4-951-949-01	SCREW (TRANSPORT LOCK), STEP	
174	4-927-627-01	ROLLER (S,G)	
* 175	1-663-815-11	LOADING BOARD	
176	4-927-654-01	WASHER (LIMITER)	
177	3-659-338-00	SPRING, COMPRESSION	
* 178	4-948-371-01	CAM (BU)	
* 179	4-948-360-01	BEARING, LOADING	
M90	A-4604-347-A	MOTOR (L) ASSY (LOADING)	

(5) BASE UNIT SECTION (BU-5R)



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le neméro spécifié.

Ref. No.	Part No.	Description	Remark
201	4-967-267-01	SHAFT (SPINDLE)	
202	3-701-439-21	WASHER	
* 203	4-921-869-11	BEARING (BSL MOTOR)	
204	4-917-565-01	SHAFT, SLED	
205	4-951-940-01	INSULATOR (BU)	
206	X-4943-033-1	PULLEY ASSY, DISK	
207	4-908-213-01	SPRING, COMPRESSION	
208	4-955-105-01	CAP, CENTERING	
209	3-899-829-01	WASHER (SLIT)	
⚠210	8-848-367-11	DEVICE, OPTICAL KSS-213B/K-N	
211	1-769-069-11	WIRE (FLAT TYPE) (16 CORE)	
212	4-917-567-01	GEAR (M)	
213	4-917-564-01	GEAR (P), FLATNESS	
* 214	A-4699-398-A	BSL BOARD, COMPLETE	
215	4-930-064-01	RETAINER, THRUST	
M102	X-4917-504-1	MOTOR ASSY (SLED)	

AC SW **BSL**

SECTION 8
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service.
  Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA. . : µA. . uPA. . : µPA. .
  uPB. . : µPB. . uPC. . : µPC. .
  uPD. . : µPD. .
- CAPACITORS
  uF: µF
- COILS
  uH: µH
- Abbreviation
  CND : Canadian
  HK : Hong Kong
  JE : Tourist
  MY : Malaysia
  SP : Singapore

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le neméro spécifié.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description				Remark
*	1-663-519-11	AC SW BOARD				
		**********				
*	3-346-266-12	PLATE, GROUND				
		<CAPACITOR>				
⚠C901	1-113-916-11	CERAMIC	0.01uF	20%	250V	
⚠C902	1-113-916-11	CERAMIC	0.01uF	20%	250V	
⚠C903	1-113-920-11	CERAMIC	0.0022uF	20%	250V	
⚠C904	1-113-920-11	CERAMIC	0.0022uF	20%	250V	
⚠C905	1-113-920-11	CERAMIC	0.0022uF	20%	250V	
		<CONNECTOR>				
CN901	1-564-321-00	PIN, CONNECTOR 2P				
		<AC INLET>				
⚠IL901	1-251-234-11	INLET, AC (AC INLET)				
		<COIL>				
⚠L901	1-424-485-11	FILTER, LINE				
		<SWITCH>				
⚠S901	1-572-267-51	SWITCH, PUSH (AC POWER) (1 KEY) (POWER)				
**********						
*	A-4699-398-A	BSL BOARD, COMPLETE				
		**********				
		<CAPACITOR>				
C01	1-126-607-11	ELECT CHIP	47uF	20%	4V	
C02	1-126-607-11	ELECT CHIP	47uF	20%	4V	
C03	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C04	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C05	1-126-209-11	ELECT	100uF	20%	4V	

Ref. No.	Part No.	Description				Remark
C06	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V	
C07	1-163-231-11	CERAMIC CHIP	15PF	5%	50V	
C21	1-164-336-11	CERAMIC CHIP	0.33uF		25V	
C22	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C23	1-163-237-11	CERAMIC CHIP	27PF	5%	50V	
C24	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V	
C25	1-163-237-11	CERAMIC CHIP	27PF	5%	50V	
C31	1-126-395-11	ELECT	22uF	20%	16V	
C32	1-126-395-11	ELECT	22uF	20%	16V	
C33	1-163-038-00	CERAMIC CHIP	0.1uF	25V		
C34	1-163-038-00	CERAMIC CHIP	0.1uF	25V		
		<CONNECTOR>				
CN01	1-778-874-11	CONNECTOR, FFC (LIF (NON-ZIF)) 19P				
CN02	1-770-014-11	CONNECTOR, FFC/FPC 16P				
		<DIODE>				
D31	8-719-987-62	DIODE	LT140SZ			
D32	8-719-987-62	DIODE	LT140SZ			
		<IC>				
IC01	8-752-072-45	IC CXA1821M-T6				
IC21	8-759-176-09	IC BA6392FP				
IC31	8-759-055-78	IC TA8407F (EL)				
		<TRANSISTOR>				
Q01	8-729-010-08	TRANSISTOR	MSB710-R			
		<RESISTOR>				
R01	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R02	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R03	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R04	1-216-089-00	METAL GLAZE	47K	5%	1/10W	

Ref. No.	Part No.	Description				Remark
R05	1-216-003-11	METAL GLAZE	12	5%	1/10W	
R06	1-216-001-00	METAL CHIP	10	5%	1/10W	
R07	1-216-295-00	CONDUCTOR, CHIP		(2012)		
R08	1-216-295-00	CONDUCTOR, CHIP		(2012)		
R09	1-216-295-00	CONDUCTOR, CHIP		(2012)		
R10	1-216-295-00	CONDUCTOR, CHIP		(2012)		
R11	1-216-101-00	METAL CHIP	150K	5%	1/10W	
R12	1-216-101-00	METAL CHIP	150K	5%	1/10W	
R21	1-216-308-00	METAL CHIP	4.7	5%	1/10W	
R31	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R32	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R33	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R34	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R35	1-216-105-91	METAL GLAZE	220K	5%	1/10W	
R36	1-216-105-91	METAL GLAZE	220K	5%	1/10W	
R37	1-216-001-00	METAL CHIP	10	5%	1/10W	
R38	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R39	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R40	1-216-105-91	METAL GLAZE	220K	5%	1/10W	
R41	1-216-105-91	METAL GLAZE	220K	5%	1/10W	
R42	1-216-001-00	METAL CHIP	10	5%	1/10W	
		<SWITCH>				
S01	1-692-095-21	SWITCH, LEAF (LIMIT SW)				
**********						
*	1-663-516-11	ENCODER BOARD				
		**********				
*	3-362-478-01	HOLDER (T), LED				
		<DIODE>				
D701	8-719-301-52	DIODE SEL2810A-C (VARI SPEED (ON/OFF))				
		<RESISTOR>				
R737	1-249-421-11	CARBON	2.2K	5%	1/4W	
R738	1-249-429-11	CARBON	10K	5%	1/4W	
R739	1-249-431-11	CARBON	15K	5%	1/4W	
		<SWITCH>				
S736	1-554-303-21	SWITCH, TACTILE (VARI SPEED (ON/OFF))				
S737	1-467-818-11	ENCODER, ROTARY (VARI SPEED)				
S738	1-572-268-11	SWITCH, SLIDE (AUTO CUE/PAUSE)				
**********						

Ref. No.	Part No.	Description				Remark
*	1-663-515-11	H.P AMP BOARD				
		**********				
		<CAPACITOR>				
C131	1-162-282-31	CERAMIC	100PF	10%	50V	
C231	1-162-282-31	CERAMIC	100PF	10%	50V	
C331	1-124-120-11	ELECT	220uF	20%	25V	
C332	1-124-120-11	ELECT	220uF	20%	25V	
C333	1-164-159-11	CERAMIC	0.1uF		50V	
		<DIODE>				
D331	8-719-987-63	DIODE	1N4148M			
		<IC>				
IC331	8-759-900-72	IC	NE5532P			
		<JACK>				
J331	1-565-327-11	JACK, LARGE TYPE 1P (PHONES)				
		<RESISTOR>				
R131	1-249-417-11	CARBON	1K	5%	1/4W	
R132	1-247-887-00	CARBON	220K	5%	1/4W	
R133	1-249-425-11	CARBON	4.7K	5%	1/4W	
R134	1-249-429-11	CARBON	10K	5%	1/4W	
R135	1-249-407-11	CARBON	150	5%	1/4W	
R231	1-249-417-11	CARBON	1K	5%	1/4W	
R232	1-247-887-00	CARBON	220K	5%	1/4W	
R233	1-249-425-11	CARBON	4.7K	5%	1/4W	
R234	1-249-429-11	CARBON	10K	5%	1/4W	
R235	1-249-407-11	CARBON	150	5%	1/4W	
⚠R331	1-247-696-11	CARBON	47	5%	1/4W	F
⚠R332	1-247-696-11	CARBON	47	5%	1/4W	F
		<VARIABLE RESISTOR >				
RV331	1-225-374-11	RES, VAR, CARBON 20K/20K (PHONE LEVEL)				
		<RELAY>				
RY331	1-515-793-11	RELAY				
**********						
*	1-663-518-11	I/O BOARD				
		*********				
		<CAPACITOR>				
C551	1-128-551-11	ELECT	22uF	20%	25V	
C552	1-128-551-11	ELECT	22uF	20%	25V	
C553	1-128-551-11	ELECT	22uF	20%	25V	

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I/O **JOG SHUTTLE** **LOADING** **MAIN**

Ref. No.	Part No.	Description				Remark
C554	1-128-551-11	ELECT	22uF	20%	25V	
C555	1-128-551-11	ELECT	22uF	20%	25V	
		<CONNECTOR>				
* CN551	1-568-832-11	SOCKET, CONNECTOR 13P				
CN552	1-764-119-21	SOCKET, (D) SUB CONNECTOR 9P (RS-232C)				
CN553	1-770-355-11	CONNECTOR (DIN) 8P (REMOTE)				
		<DIODE>				
D551	8-719-987-63	DIODE 1N4148M				
D552	8-719-987-63	DIODE 1N4148M				
D553	8-719-987-63	DIODE 1N4148M				
D554	8-719-987-63	DIODE 1N4148M				
D555	8-719-987-63	DIODE 1N4148M				
D556	8-719-987-63	DIODE 1N4148M				
D557	8-719-987-63	DIODE 1N4148M				
D558	8-719-987-63	DIODE 1N4148M				
D559	8-719-987-63	DIODE 1N4148M				
D560	8-719-987-63	DIODE 1N4148M				
		<IC>				
IC551	8-759-065-85	IC MAX232N				
		<RESISTOR>				
R551	1-249-409-11	CARBON	220	5%	1/4W	
R552	1-249-409-11	CARBON	220	5%	1/4W	
R553	1-249-409-11	CARBON	220	5%	1/4W	
R554	1-249-409-11	CARBON	220	5%	1/4W	
R555	1-247-807-31	CARBON	100	5%	1/4W	
R556	1-247-807-31	CARBON	100	5%	1/4W	
R557	1-247-807-31	CARBON	100	5%	1/4W	
R558	1-247-807-31	CARBON	100	5%	1/4W	
		<SWITCH>				
S551	1-570-707-21	SWITCH, SLIDE (MODE (1, 2))				
**********						
*	1-663-517-11	JOG SHUTTLE BOARD				
		**********				
		<SWITCH>				
S741	1-692-722-11	SWITCH, ROTARY ENCODER (SHUTTLE) (DATA)				
**********						
*	1-663-815-11	LOADING BOARD				
		**********				
		<CAPACITOR>				
C91	1-162-306-11	CERAMIC	0.01uF	20%	16V	

Ref. No.	Part No.	Description				Remark
		<RESISTOR>				
⚠R91	1-247-727-11	CARBON	10	5%	1/2W	F
⚠R92	1-247-727-11	CARBON	10	5%	1/2W	F
		<SWITCH>				
S91	1-571-300-21	SWITCH, ROTARY (LOADING OUT SW)				
S92	1-571-300-21	SWITCH, ROTARY (LOADING IN SW)				
**********						
*	A-4699-400-A	MAIN BOARD, COMPLETE				
		**********				
*	1-560-242-51	BUS BAR 7P				
*	3-309-144-21	HEAT SINK				
*	4-363-146-21	HEAT SINK, V.OUT				
*	4-363-146-71	HEAT SINK, V.OUT				
	7-685-872-09	SCREW +BVTT 3X8 (S)				
		<CAPACITOR>				
C101	1-136-165-00	FILM	0.1uF	5%	50V	
C102	1-136-165-00	FILM	0.1uF	5%	50V	
C103	1-136-960-11	FILM	0.1uF	10%	160V	
C104	1-136-960-11	FILM	0.1uF	10%	160V	
C105	1-124-910-11	ELECT	47uF	20%	50V	
C106	1-115-197-11	ELECT	100uF	20%	25V	
C107	1-136-165-00	FILM	0.1uF	5%	50V	
C108	1-124-910-11	ELECT	47uF	20%	50V	
C109	1-136-165-00	FILM	0.1uF	5%	50V	
C110	1-136-165-00	FILM	0.1uF	5%	50V	
C111	1-136-228-11	FILM	0.0012uF	5%	100V	
C112	1-136-233-11	FILM	0.0047uF	5%	100V	
C113	1-136-228-11	FILM	0.0012uF	5%	100V	
C114	1-128-201-11	ELECT	100uF	20%	50V	
C115	1-110-339-11	MYLAR	220PF	5%	50V	
C116	1-136-173-00	FILM	0.47uF	5%	50V	
C120	1-107-597-11	MICA	22PF	5%	500V	
C121	1-107-597-11	MICA	22PF	5%	500V	
C122	1-110-495-11	ELECT	220uF	20%	25V	
C123	1-110-495-11	ELECT	220uF	20%	25V	
C130	1-124-721-11	ELECT	10uF	20%	50V	
C201	1-136-165-00	FILM	0.1uF	5%	50V	
C202	1-136-165-00	FILM	0.1uF	5%	50V	
C203	1-136-960-11	FILM	0.1uF	10%	160V	
C204	1-136-960-11	FILM	0.1uF	10%	160V	
C205	1-124-910-11	ELECT	47uF	20%	50V	
C206	1-115-197-11	ELECT	100uF	20%	25V	
C207	1-136-165-00	FILM	0.1uF	5%	50V	
C208	1-124-910-11	ELECT	47uF	20%	50V	
C209	1-136-165-00	FILM	0.1uF	5%	50V	

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Ref. No.	Part No.	Description				Remark
C210	1-136-165-00	FILM	0.1uF	5%	50V	
C211	1-136-228-11	FILM	0.0012uF	5%	100V	
C212	1-136-233-11	FILM	0.0047uF	5%	100V	
C213	1-136-228-11	FILM	0.0012uF	5%	100V	
C214	1-128-201-11	ELECT	100uF	20%	50V	
C215	1-110-339-11	MYLAR	220PF	5%	50V	
C216	1-136-173-00	FILM	0.47uF	5%	50V	
C220	1-107-597-11	MICA	22PF	5%	500V	
C221	1-107-597-11	MICA	22PF	5%	500V	
C222	1-110-495-11	ELECT	220uF	20%	25V	
C223	1-110-495-11	ELECT	220uF	20%	25V	
C230	1-124-721-11	ELECT	10uF	20%	50V	
C301	1-110-578-11	ELECT	3300uF	20%	25V	
C302	1-110-578-11	ELECT	3300uF	20%	25V	
C303	1-136-165-00	FILM	0.1uF	5%	50V	
C304	1-136-165-00	FILM	0.1uF	5%	50V	
C305	1-128-198-11	ELECT	22uF	20%	50V	
C306	1-128-198-11	ELECT	22uF	20%	50V	
C307	1-136-165-00	FILM	0.1uF	5%	50V	
C308	1-136-165-00	FILM	0.1uF	5%	50V	
C309	1-128-198-11	ELECT	22uF	20%	50V	
C310	1-128-198-11	ELECT	22uF	20%	50V	
C311	1-126-935-11	ELECT	470uF	20%	16V	
C312	1-164-159-11	CERAMIC	0.1uF		50V	
C313	1-126-964-11	ELECT	10uF	20%	50V	
C314	1-126-967-11	ELECT	47uF	20%	16V	
C315	1-162-290-31	CERAMIC	470PF	10%	50V	
C401	1-126-967-11	ELECT	47uF	20%	16V	
C402	1-164-159-11	CERAMIC	0.1uF		50V	
C403	1-164-159-11	CERAMIC	0.1uF		50V	
C405	1-162-306-11	CERAMIC	0.01uF	20%	16V	
C406	1-162-206-31	CERAMIC	20PF	5%	50V	
C407	1-162-206-31	CERAMIC	20PF	5%	50V	
C408	1-162-290-31	CERAMIC	470PF	10%	50V	
C409	1-164-159-11	CERAMIC	0.1uF		50V	
C410	1-162-290-31	CERAMIC	470PF	10%	50V	
C412	1-164-159-11	CERAMIC	0.1uF		50V	
C413	1-164-159-11	CERAMIC	0.1uF		50V	
C414	1-136-161-00	FILM	0.047uF	5%	50V	
C415	1-162-600-11	CERAMIC	0.0047uF	20%	16V	
C416	1-162-301-11	CERAMIC	0.0015uF	20%	16V	
C417	1-162-282-31	CERAMIC	100PF	10%	50V	
C418	1-162-306-11	CERAMIC	0.01uF	20%	16V	
C419	1-136-173-00	FILM	0.47uF	5%	50V	
C420	1-164-159-11	CERAMIC	0.1uF		50V	
C421	1-136-155-00	FILM	0.015uF	5%	50V	
C422	1-130-477-00	MYLAR	0.0033uF	5%	50V	
C431	1-126-967-11	ELECT	47uF	20%	16V	
C432	1-164-159-11	CERAMIC	0.1uF		50V	
C433	1-164-159-11	CERAMIC	0.1uF		50V	
C434	1-164-159-11	CERAMIC	0.1uF		50V	
C435	1-126-964-11	ELECT	10uF	20%	50V	
C436	1-162-207-31	CERAMIC	22PF	5%	50V	
C437	1-136-173-00	FILM	0.47uF	5%	50V	
C438	1-126-964-11	ELECT	10uF	20%	50V	
C440	1-162-301-11	CERAMIC	0.0015uF	20%	16V	
C441	1-126-967-11	ELECT	47uF	20%	16V	
C442	1-164-159-11	CERAMIC	0.1uF		50V	
C461	1-126-967-11	ELECT	47uF	20%	16V	
C462	1-164-159-11	CERAMIC	0.1uF		50V	
C463	1-164-159-11	CERAMIC	0.1uF		50V	
C464	1-164-159-11	CERAMIC	0.1uF		50V	
C465	1-162-306-11	CERAMIC	0.01uF	20%	16V	
C471	1-162-306-11	CERAMIC	0.01uF	20%	16V	
C472	1-162-282-31	CERAMIC	100PF	10%	50V	
C501	1-126-967-11	ELECT	47uF	20%	16V	
C502	1-164-159-11	CERAMIC	0.1uF		50V	
C503	1-126-967-11	ELECT	47uF	20%	16V	
C504	1-164-159-11	CERAMIC	0.1uF		50V	
C505	1-162-306-11	CERAMIC	0.01uF	20%	16V	
C506	1-162-203-31	CERAMIC	15PF	5%	50V	
C507	1-162-203-31	CERAMIC	15PF	5%	50V	
C511	1-125-486-11	DOUBLE LAYERS	0.22F		5.5V	
C512	1-164-159-11	CERAMIC	0.1uF		50V	
C513	1-162-306-11	CERAMIC	0.01uF	20%	16V	
C521	1-162-301-11	CERAMIC	0.0015uF	20%	16V	
C522	1-162-301-11	CERAMIC	0.0015uF	20%	16V	
C523	1-162-301-11	CERAMIC	0.0015uF	20%	16V	
C531	1-126-967-11	ELECT	47uF	20%	16V	
C532	1-164-159-11	CERAMIC	0.1uF		50V	
C541	1-126-964-11	ELECT	10uF	20%	50V	
C601	1-126-939-11	ELECT	10000uF	20%	16V	
C602	1-126-768-11	ELECT	2200uF	20%	16V	
C603	1-126-964-11	ELECT	10uF	20%	50V	
C604	1-126-964-11	ELECT	10uF	20%	50V	
C605	1-126-935-11	ELECT	470uF	20%	16V	
C606	1-126-934-11	ELECT	220uF	20%	16V	
C607	1-126-934-11	ELECT	220uF	20%	16V	
C608	1-126-949-11	ELECT	220uF	20%	35V	
C609	1-126-949-11	ELECT	220uF	20%	35V	
C610	1-126-969-11	ELECT	220uF	20%	50V	
C611	1-126-949-11	ELECT	220uF	20%	35V	

<CONNECTOR>

CN301	1-691-771-11	PLUG (MICRO CONNECTOR) 9P	
CN302	1-770-722-11	CONNECTOR, BOARD TO BOARD 6P	
* CN331	1-568-934-11	PIN, CONNECTOR 7P	

MAIN

Ref. No.	Part No.	Description	Remark
CN401	1-568-802-11	SOCKET, CONNECTOR 19P	
CN402	1-564-508-11	SOCKET, CONNECTOR 5P	
CN461	1-770-721-11	CONNECTOR, BOARD TO BOARD 4P	
* CN501	1-568-842-11	SOCKET, CONNECTOR 27P	
* CN511	1-568-832-11	SOCKET, CONNECTOR 13P	
* CN531	1-568-954-11	PIN, CONNECTOR 5P	
		<DIODE>	
D301	8-719-026-59	DIODE 11DF2-TA2B5	
D302	8-719-026-59	DIODE 11DF2-TA2B5	
D303	8-719-026-59	DIODE 11DF2-TA2B5	
D304	8-719-026-59	DIODE 11DF2-TA2B5	
D305	8-719-987-63	DIODE 1N4148M	
D306	8-719-987-63	DIODE 1N4148M	
D441	8-719-987-63	DIODE 1N4148M	
D442	8-719-987-63	DIODE 1N4148M	
D511	8-719-987-63	DIODE 1N4148M	
D531	8-719-933-33	DIODE HZS6A1L	
D601	8-719-200-77	DIODE 10E2N	
D602	8-719-200-77	DIODE 10E2N	
D603	8-719-200-77	DIODE 10E2N	
D604	8-719-200-77	DIODE 10E2N	
D605	8-719-200-82	DIODE 11ES2	
D606	8-719-200-82	DIODE 11ES2	
D607	8-719-200-82	DIODE 11ES2	
D608	8-719-200-82	DIODE 11ES2	
D609	8-719-934-22	DIODE HZS30-2L	
D610	8-719-933-33	DIODE HZS6A1L	
		<IC>	
IC101	8-759-277-59	IC PCM1702P-J	
IC102	8-759-259-11	IC OPA604AP	
IC103	8-759-259-12	IC OPA2604AP	
IC104	8-759-900-72	IC NE5532P	
IC201	8-759-277-59	IC PCM1702P-J	
IC202	8-759-259-11	IC OPA604AP	
IC203	8-759-259-12	IC OPA2604AP	
IC204	8-759-900-72	IC NE5532P	
IC301	8-759-231-58	IC TA7812S	
IC302	8-759-245-86	IC TA7912S	
IC303	8-759-231-53	IC TA7805S	
IC304	8-759-245-79	IC TA79005S	
IC305	8-759-156-71	IC SM5843AP1	
IC401	8-752-369-78	IC CXD2545Q	
IC402	8-759-428-57	IC LC89170M	
IC421	8-759-634-51	IC M5218AP	
IC431	8-759-295-09	IC TLC2932IPW	
IC432	8-759-921-81	IC SN74HC4066N	
IC441	8-759-239-85	IC TC74HCT00AP	

Ref. No.	Part No.	Description	Remark
IC461	8-759-917-18	IC SN74HCU04AN	
IC462	8-759-921-19	IC SN74HC161AN	
IC463	8-759-443-15	IC CS8402A	
IC501	8-759-443-14	IC HD6473238F-TTX1025	
IC502	8-759-397-04	IC LC3564SM-10	
IC503	8-759-165-80	IC PST600C-T	
IC531	8-759-822-09	IC LB1641	
IC601	8-759-231-53	IC TA7805S	
IC602	8-759-604-86	IC M5F7807L	
IC603	8-759-604-90	IC M5F7907L	
		<JACK>	
J301	1-750-679-11	JACK, PIN 2P (ANALOG OUT (UNBALANCE))	
J441	1-695-038-11	CONNECTOR ASSY, BNC 1P (EXT SYNC INPUT)	
J461	1-770-905-11	JACK, PIN 1P (DIGITAL OUT)	
		<COIL>	
L401	1-410-509-11	INDUCTOR 10uH	
L431	1-410-509-11	INDUCTOR 10uH	
L432	1-410-509-11	INDUCTOR 10uH	
L461	1-410-509-11	INDUCTOR 10uH	
		<TRANSISTOR>	
Q301	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q302	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q521	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q522	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q523	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q524	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q525	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q601	8-729-118-01	TRANSISTOR 2SB1116	
Q602	8-729-119-76	TRANSISTOR 2SA1175-HFE	
		<RESISTOR>	
R101	1-249-413-11	CARBON 470 5% 1/4W	
R102	1-247-718-11	CARBON 2.7K 5% 1/4W	
R103	1-249-556-11	CARBON 1.5K 5% 1/4W	
R104	1-249-556-11	CARBON 1.5K 5% 1/4W	
R105	1-249-528-91	CARBON 100 5% 1/4W	
R106	1-247-887-00	CARBON 220K 5% 1/4W	
R107	1-249-528-91	CARBON 100 5% 1/4W	
R110	1-247-713-11	CARBON 1K 5% 1/4W	
R111	1-247-721-11	CARBON 4.7K 5% 1/4W	
R112	1-249-460-11	CARBON 15K 5% 1/4W	
R113	1-247-721-11	CARBON 4.7K 5% 1/4W	
R114	1-249-460-11	CARBON 15K 5% 1/4W	
R115	1-247-721-11	CARBON 4.7K 5% 1/4W	
R116	1-249-564-91	CARBON 3.3K 5% 1/4W	
R117	1-249-460-11	CARBON 15K 5% 1/4W	

Ref. No.	Part No.	Description				Remark
R118	1-249-520-11	CARBON	47	5%	1/4W	
R119	1-249-520-11	CARBON	47	5%	1/4W	
R120	1-247-887-00	CARBON	220K	5%	1/4W	
R121	1-247-887-00	CARBON	220K	5%	1/4W	
R130	1-249-417-11	CARBON	1K	5%	1/4W	
R201	1-249-413-11	CARBON	470	5%	1/4W	
R202	1-247-718-11	CARBON	2.7K	5%	1/4W	
R203	1-249-556-11	CARBON	1.5K	5%	1/4W	
R204	1-249-556-11	CARBON	1.5K	5%	1/4W	
R205	1-249-528-91	CARBON	100	5%	1/4W	
R206	1-247-887-00	CARBON	220K	5%	1/4W	
R207	1-249-528-91	CARBON	100	5%	1/4W	
R210	1-247-713-11	CARBON	1K	5%	1/4W	
R211	1-247-721-11	CARBON	4.7K	5%	1/4W	
R212	1-249-460-11	CARBON	15K	5%	1/4W	
R213	1-247-721-11	CARBON	4.7K	5%	1/4W	
R214	1-249-460-11	CARBON	15K	5%	1/4W	
R215	1-247-721-11	CARBON	4.7K	5%	1/4W	
R216	1-249-564-91	CARBON	3.3K	5%	1/4W	
R217	1-249-460-11	CARBON	15K	5%	1/4W	
R218	1-249-520-11	CARBON	47	5%	1/4W	
R219	1-249-520-11	CARBON	47	5%	1/4W	
R220	1-247-887-00	CARBON	220K	5%	1/4W	
R221	1-247-887-00	CARBON	220K	5%	1/4W	
R230	1-249-417-11	CARBON	1K	5%	1/4W	
R301	1-249-413-11	CARBON	470	5%	1/4W	
R302	1-249-413-11	CARBON	470	5%	1/4W	
R304	1-249-429-11	CARBON	10K	5%	1/4W	
R305	1-249-429-11	CARBON	10K	5%	1/4W	
R306	1-249-437-11	CARBON	47K	5%	1/4W	
R307	1-249-429-11	CARBON	10K	5%	1/4W	
R308	1-249-441-11	CARBON	100K	5%	1/4W	
R309	1-249-417-11	CARBON	1K	5%	1/4W	
R310	1-249-433-11	CARBON	22K	5%	1/4W	
R401	1-249-417-11	CARBON	1K	5%	1/4W	
R402	1-249-431-11	CARBON	15K	5%	1/4W	
R403	1-249-441-11	CARBON	100K	5%	1/4W	
R404	1-249-431-11	CARBON	15K	5%	1/4W	
R405	1-249-435-11	CARBON	33K	5%	1/4W	
R406	1-247-807-31	CARBON	100	5%	1/4W	
R407	1-247-843-11	CARBON	3.3K	5%	1/4W	
R408	1-247-843-11	CARBON	3.3K	5%	1/4W	
R409	1-249-429-11	CARBON	10K	5%	1/4W	
R410	1-249-429-11	CARBON	10K	5%	1/4W	
R411	1-249-441-11	CARBON	100K	5%	1/4W	
R412	1-247-903-00	CARBON	1M	5%	1/4W	
R413	1-249-413-11	CARBON	470	5%	1/4W	
R414	1-249-413-11	CARBON	470	5%	1/4W	
R415	1-249-413-11	CARBON	470	5%	1/4W	
R416	1-249-417-11	CARBON	1K	5%	1/4W	
R417	1-249-417-11	CARBON	1K	5%	1/4W	
R418	1-249-417-11	CARBON	1K	5%	1/4W	
R420	1-249-413-11	CARBON	470	5%	1/4W	
R421	1-249-429-11	CARBON	10K	5%	1/4W	
R422	1-249-429-11	CARBON	10K	5%	1/4W	
R423	1-249-439-11	CARBON	68K	5%	1/4W	
R424	1-249-437-11	CARBON	47K	5%	1/4W	
R425	1-249-435-11	CARBON	33K	5%	1/4W	
R426	1-249-433-11	CARBON	22K	5%	1/4W	
R427	1-247-887-00	CARBON	220K	5%	1/4W	
R428	1-249-429-11	CARBON	10K	5%	1/4W	
R429	1-249-429-11	CARBON	10K	5%	1/4W	
R431	1-249-425-11	CARBON	4.7K	5%	1/4W	
R432	1-249-415-11	CARBON	680	5%	1/4W	
R433	1-249-425-11	CARBON	4.7K	5%	1/4W	
R434	1-247-843-11	CARBON	3.3K	5%	1/4W	
R435	1-249-413-11	CARBON	470	5%	1/4W	
R436	1-249-433-11	CARBON	22K	5%	1/4W	
R437	1-249-417-11	CARBON	1K	5%	1/4W	
R438	1-249-412-11	CARBON	390	5%	1/4W	
R439	1-249-433-11	CARBON	22K	5%	1/4W	
R441	1-247-804-11	CARBON	75	5%	1/4W	
R442	1-249-417-11	CARBON	1K	5%	1/4W	
R443	1-249-429-11	CARBON	10K	5%	1/4W	
R444	1-247-887-00	CARBON	220K	5%	1/4W	
R445	1-249-433-11	CARBON	22K	5%	1/4W	
R451	1-249-417-11	CARBON	1K	5%	1/4W	
R452	1-249-433-11	CARBON	22K	5%	1/4W	
R453	1-249-433-11	CARBON	22K	5%	1/4W	
R454	1-249-413-11	CARBON	470	5%	1/4W	
R461	1-249-417-11	CARBON	1K	5%	1/4W	
R462	1-249-417-11	CARBON	1K	5%	1/4W	
R463	1-249-417-11	CARBON	1K	5%	1/4W	
R464	1-249-417-11	CARBON	1K	5%	1/4W	
R465	1-249-433-11	CARBON	22K	5%	1/4W	
R466	1-249-433-11	CARBON	22K	5%	1/4W	
R467	1-249-401-11	CARBON	47	5%	1/4W	
R468	1-249-401-11	CARBON	47	5%	1/4W	
R471	1-247-807-31	CARBON	100	5%	1/4W	
R472	1-247-804-11	CARBON	75	5%	1/4W	
R500	1-249-427-11	CARBON	6.8K	5%	1/4W	
R501	1-249-417-11	CARBON	1K	5%	1/4W	
R502	1-249-433-11	CARBON	22K	5%	1/4W	
R503	1-249-433-11	CARBON	22K	5%	1/4W	
R504	1-249-417-11	CARBON	1K	5%	1/4W	
R505	1-249-417-11	CARBON	1K	5%	1/4W	
R506	1-249-417-11	CARBON	1K	5%	1/4W	

MAIN PANEL

Ref. No.	Part No.	Description				Remark
R511	1-249-401-11	CARBON	47	5%	1/4W	
R512	1-249-417-11	CARBON	1K	5%	1/4W	
R513	1-249-433-11	CARBON	22K	5%	1/4W	
R514	1-249-433-11	CARBON	22K	5%	1/4W	
R515	1-249-427-11	CARBON	6.8K	5%	1/4W	
R521	1-249-433-11	CARBON	22K	5%	1/4W	
R522	1-249-425-11	CARBON	4.7K	5%	1/4W	
R523	1-249-433-11	CARBON	22K	5%	1/4W	
R524	1-249-433-11	CARBON	22K	5%	1/4W	
R525	1-249-425-11	CARBON	4.7K	5%	1/4W	
R526	1-249-433-11	CARBON	22K	5%	1/4W	
R527	1-249-433-11	CARBON	22K	5%	1/4W	
R528	1-249-425-11	CARBON	4.7K	5%	1/4W	
R529	1-249-433-11	CARBON	22K	5%	1/4W	
R530	1-249-433-11	CARBON	22K	5%	1/4W	
R531	1-249-433-11	CARBON	22K	5%	1/4W	
R532	1-249-401-11	CARBON	47	5%	1/4W	
R533	1-249-433-11	CARBON	22K	5%	1/4W	
R534	1-249-401-11	CARBON	47	5%	1/4W	
R541	1-249-441-11	CARBON	100K	5%	1/4W	
R542	1-247-903-00	CARBON	1M	5%	1/4W	
R543	1-249-417-11	CARBON	1K	5%	1/4W	
R602	1-249-425-11	CARBON	4.7K	5%	1/4W	
R603	1-249-395-11	CARBON	15	5%	1/4W	
R604	1-249-433-11	CARBON	22K	5%	1/4W	
		<VARIABLE RESISTOR >				
RV101	1-237-518-21	RES, ADJ, CERMET 10K (BALANCE)				
RV201	1-237-518-21	RES, ADJ, CERMET 10K (BALANCE)				
		<RELAY>				
RY101	1-515-793-11	RELAY				
RY201	1-515-793-11	RELAY				
RY301	1-515-793-11	RELAY				
		<SWITCH>				
S441	1-570-707-21	SWITCH, SLIDE (EXT SYNC INPUT (ON/OFF))				
S442	1-570-707-21	SWITCH, SLIDE (EXT SYNC INPUT (75• ON/OFF))				
		<TRANSFORMER>				
T461	1-409-594-11	COIL (WITH CORE)				
T462	1-423-800-11	TRANSFORMER, PULSE				
		<VIBRATOR>				
X401	1-579-280-31	VIBRATOR, CRYSTAL (16.9344MHz)				
X501	1-577-234-11	OSCILLATOR, CRYSTAL (19.6608MHz)				

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Ref. No.	Part No.	Description				Remark
*	A-4699-402-A	PANEL BOARD, COMPLETE				
		**********				
*	3-362-478-01	HOLDER (T), LED				
*	4-932-810-11	CUSHION (FL)				
*	4-947-170-01	HOLDER				
		<CAPACITOR>				
C701	1-164-159-11	CERAMIC	0.1uF		50V	
C702	1-164-159-11	CERAMIC	0.1uF		50V	
C703	1-162-306-11	CERAMIC	0.01uF	20%	16V	
C704	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C705	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C706	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C707	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C708	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C709	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C710	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C711	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C712	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C713	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C714	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C715	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C716	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C717	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C718	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C719	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C720	1-164-159-11	CERAMIC	0.1uF		50V	
		<CONNECTOR>				
* CN701	1-568-869-11	SOCKET, CONNECTOR 27P				
CN703	1-573-734-31	PIN, CONNECTOR 7P				
		<DIODE>				
D702	8-719-301-52	DIODE SEL2810A-C (REHERSAL)				
D703	8-719-303-02	DIODE SEL2510C-D (PLAY)				
D704	8-719-301-52	DIODE SEL2810A-C (PAUSE)				
D705	8-719-301-52	DIODE SEL2810A-C (CUE/STBY)				
		<FILTER>				
FL701	1-517-588-11	INDICATOR TUBE, FLUORESCENT				
		<IC>				
IC701	8-752-879-33	IC CXP82220-049Q				
IC702	8-759-373-49	IC NJL54H400				
		<TRANSISTOR>				
Q701	8-729-620-05	TRANSISTOR 2SC2603-EF				

Ref. No.	Part No.	Description				Remark
Q702	8-729-620-05	TRANSISTOR 2SC2603-EF				
Q703	8-729-620-05	TRANSISTOR 2SC2603-EF				
Q704	8-729-620-05	TRANSISTOR 2SC2603-EF				
Q705	8-729-620-05	TRANSISTOR 2SC2603-EF				
Q706	8-729-620-05	TRANSISTOR 2SC2603-EF				
Q707	8-729-620-05	TRANSISTOR 2SC2603-EF				
		<RESISTOR>				
R701	1-249-427-11	CARBON	6.8K	5%	1/4W	
R702	1-249-415-11	CARBON	680	5%	1/4W	
R703	1-249-417-11	CARBON	1K	5%	1/4W	
R704	1-249-419-11	CARBON	1.5K	5%	1/4W	
R705	1-249-421-11	CARBON	2.2K	5%	1/4W	
R706	1-247-843-11	CARBON	3.3K	5%	1/4W	
R707	1-249-427-11	CARBON	6.8K	5%	1/4W	
R708	1-249-415-11	CARBON	680	5%	1/4W	
R709	1-249-417-11	CARBON	1K	5%	1/4W	
R710	1-249-419-11	CARBON	1.5K	5%	1/4W	
R711	1-249-421-11	CARBON	2.2K	5%	1/4W	
R712	1-247-843-11	CARBON	3.3K	5%	1/4W	
R713	1-249-427-11	CARBON	6.8K	5%	1/4W	
R714	1-249-415-11	CARBON	680	5%	1/4W	
R715	1-249-417-11	CARBON	1K	5%	1/4W	
R716	1-249-419-11	CARBON	1.5K	5%	1/4W	
R717	1-249-421-11	CARBON	2.2K	5%	1/4W	
R718	1-247-843-11	CARBON	3.3K	5%	1/4W	
R719	1-249-433-11	CARBON	22K	5%	1/4W	
R720	1-249-427-11	CARBON	6.8K	5%	1/4W	
R721	1-249-415-11	CARBON	680	5%	1/4W	
R722	1-249-417-11	CARBON	1K	5%	1/4W	
R723	1-249-419-11	CARBON	1.5K	5%	1/4W	
R724	1-249-421-11	CARBON	2.2K	5%	1/4W	
R725	1-247-843-11	CARBON	3.3K	5%	1/4W	
R726	1-249-427-11	CARBON	6.8K	5%	1/4W	
R728	1-249-427-11	CARBON	6.8K	5%	1/4W	
R729	1-249-415-11	CARBON	680	5%	1/4W	
R730	1-249-417-11	CARBON	1K	5%	1/4W	
R731	1-249-419-11	CARBON	1.5K	5%	1/4W	
R732	1-249-421-11	CARBON	2.2K	5%	1/4W	
R733	1-249-427-11	CARBON	6.8K	5%	1/4W	
R734	1-249-415-11	CARBON	680	5%	1/4W	
R735	1-249-417-11	CARBON	1K	5%	1/4W	
R736	1-249-419-11	CARBON	1.5K	5%	1/4W	
R740	1-249-427-11	CARBON	6.8K	5%	1/4W	
R741	1-249-427-11	CARBON	6.8K	5%	1/4W	
R742	1-249-425-11	CARBON	4.7K	5%	1/4W	
R743	1-249-425-11	CARBON	4.7K	5%	1/4W	
R744	1-249-425-11	CARBON	4.7K	5%	1/4W	
R745	1-249-425-11	CARBON	4.7K	5%	1/4W	
R746	1-249-425-11	CARBON	4.7K	5%	1/4W	
R747	1-249-425-11	CARBON	4.7K	5%	1/4W	
R748	1-249-425-11	CARBON	4.7K	5%	1/4W	
R749	1-249-425-11	CARBON	4.7K	5%	1/4W	
R750	1-249-406-11	CARBON	120	5%	1/4W	
R751	1-249-406-11	CARBON	120	5%	1/4W	
R752	1-247-807-31	CARBON	100	5%	1/4W	
R753	1-247-807-31	CARBON	100	5%	1/4W	
R754	1-247-807-31	CARBON	100	5%	1/4W	
R755	1-249-433-11	CARBON	22K	5%	1/4W	
R761	1-249-441-11	CARBON	100K	5%	1/4W	
R762	1-249-441-11	CARBON	100K	5%	1/4W	
R763	1-249-441-11	CARBON	100K	5%	1/4W	
R764	1-249-441-11	CARBON	100K	5%	1/4W	
R765	1-249-441-11	CARBON	100K	5%	1/4W	
R766	1-249-441-11	CARBON	100K	5%	1/4W	
R767	1-249-441-11	CARBON	100K	5%	1/4W	
R768	1-249-441-11	CARBON	100K	5%	1/4W	
R769	1-249-441-11	CARBON	100K	5%	1/4W	
R770	1-249-441-11	CARBON	100K	5%	1/4W	
R771	1-249-441-11	CARBON	100K	5%	1/4W	
R772	1-249-441-11	CARBON	100K	5%	1/4W	
R773	1-249-441-11	CARBON	100K	5%	1/4W	
R774	1-249-441-11	CARBON	100K	5%	1/4W	
R775	1-249-441-11	CARBON	100K	5%	1/4W	
R776	1-249-441-11	CARBON	100K	5%	1/4W	
R777	1-249-441-11	CARBON	100K	5%	1/4W	
R778	1-249-441-11	CARBON	100K	5%	1/4W	
R779	1-249-441-11	CARBON	100K	5%	1/4W	
R780	1-249-441-11	CARBON	100K	5%	1/4W	
R781	1-249-441-11	CARBON	100K	5%	1/4W	
R782	1-249-441-11	CARBON	100K	5%	1/4W	
R783	1-249-441-11	CARBON	100K	5%	1/4W	
R784	1-249-441-11	CARBON	100K	5%	1/4W	
R785	1-249-441-11	CARBON	100K	5%	1/4W	
R786	1-249-441-11	CARBON	100K	5%	1/4W	
R787	1-249-441-11	CARBON	100K	5%	1/4W	
R788	1-249-441-11	CARBON	100K	5%	1/4W	
		<SWITCH>				
S701	1-554-303-21	SWITCH, TACTILE (REHERSAL)				
S702	1-554-303-21	SWITCH, TACTILE (FADER)				
S703	1-554-303-21	SWITCH, TACTILE (▶▶)				
S704	1-554-303-21	SWITCH, TACTILE (◀◀)				
S705	1-554-303-21	SWITCH, TACTILE (▶▶I) (AMS)				
S706	1-554-303-21	SWITCH, TACTILE (I◀◀) (AMS)				
S707	1-554-303-21	SWITCH, TACTILE (ENTER)				
S708	1-554-303-21	SWITCH, TACTILE (CUE/STBY)				

PANEL | **SLIDE SW** | **XLR**

Ref. No.	Part No.	Description	Remark
S709	1-554-303-21	SWITCH, TACTILE (STOP)	
S710	1-554-303-21	SWITCH, TACTILE (❚❚) (PAUSE)	
S711	1-554-303-21	SWITCH, TACTILE (▶) (PLAY)	
S712	1-554-303-21	SWITCH, TACTILE (⏏) (OPEN/CLOSE)	
S713	1-554-303-21	SWITCH, TACTILE (7)	
S714	1-554-303-21	SWITCH, TACTILE (8)	
S715	1-554-303-21	SWITCH, TACTILE (9)	
S716	1-554-303-21	SWITCH, TACTILE (10)	
S717	1-554-303-21	SWITCH, TACTILE (11)	
S718	1-554-303-21	SWITCH, TACTILE (12)	
S720	1-554-303-21	SWITCH, TACTILE (1)	
S721	1-554-303-21	SWITCH, TACTILE (2)	
S722	1-554-303-21	SWITCH, TACTILE (3)	
S723	1-554-303-21	SWITCH, TACTILE (4)	
S724	1-554-303-21	SWITCH, TACTILE (5)	
S725	1-554-303-21	SWITCH, TACTILE (6)	
S728	1-554-303-21	SWITCH, TACTILE (PROGRAM)	
S729	1-554-303-21	SWITCH, TACTILE (CONTINUE)	
S730	1-554-303-21	SWITCH, TACTILE (A-B)	
S731	1-554-303-21	SWITCH, TACTILE (REPEAT)	
S732	1-554-303-21	SWITCH, TACTILE (>10)	
S733	1-554-303-21	SWITCH, TACTILE (CLEAR)	
S734	1-554-303-21	SWITCH, TACTILE (CHECK)	
S735	1-554-303-21	SWITCH, TACTILE (TIME.SPEED)	
		<VIBRATOR>	
X701	1-577-358-21	VIBRATOR, CERAMIC (4MHz)	
**********			
*	1-663-514-11	SLIDE SW BOARD **********	
		<RESISTOR>	
R727	1-249-431-11	CARBON 15K 5% 1/4W	
		<SWITCH>	
S719	1-572-269-11	SWITCH, SLIDE (TIMER)	
S726	1-572-268-11	SWITCH, SLIDE (REMOTE SELECT)	
**********			
*	1-663-512-11	XLR BOARD *********	
		<CAPACITOR>	
C124	1-110-339-11	MYLAR 220PF 5% 50V	
C125	1-110-339-11	MYLAR 220PF 5% 50V	
C224	1-110-339-11	MYLAR 220PF 5% 50V	
C225	1-110-339-11	MYLAR 220PF 5% 50V	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le neméro spécifié.

Ref. No.	Part No.	Description	Remark
		<CONNECTOR>	
CN303	1-770-726-11	CONNECTOR, BOARD TO BOARD 6P	
CN304	1-750-785-11	CONNECTOR (XLR TYPE) 3P (ANALOG OUT (BALANCE))	
CN462	1-770-725-11	CONNECTOR, BOARD TO BOARD 4P	
CN463	1-750-787-11	CONNECTOR (XLR TYPE) 3P (DIGITAL OUT (AES/EBU))	
**********			
		MISCELLANEOUS **********	
58	1-773-252-11	WIRE (FLAT TYPE) (27 CORE)	
104	1-773-119-11	WIRE (FLAT TYPE) (19 CORE)	
110	1-769-977-11	WIRE (FLAT TYPE) (13 CORE)	
⚠210	8-848-367-11	DEVICE, OPTICAL KSS-213B/K-N	
211	1-769-069-11	WIRE (FLAT TYPE) (16 CORE)	
M102	X-4917-504-1	MOTOR ASSY (SLED)	
M90	A-4604-347-A	MOTOR (L) ASSY (LOADING)	
⚠T901	1-429-825-11	TRANSFORMER, POWER (US, Canadian)	
⚠T901	1-429-826-11	TRANSFORMER, POWER (AEP, UK)	
**********			
		********** HARDWARE LIST **********	
#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
#2	7-685-872-09	SCREW +BVTT 3X8 (S)	
#3	7-682-961-01	SCREW +PSW 4X8	
#4	7-685-660-29	SCREW +BVTP 4X10 TYPE2 SLIT	
#5	7-685-871-09	SCREW +BVTT 3X6 (S)	
#6	7-624-105-04	STOP RING 2.3, TYPE -E	
#7	7-682-544-04	SCREW +P 3X3	
#8	7-688-003-12	W 3, MIDDLE	
#10	7-685-134-19	SCREW +BTP 2.6X8 TYPE2 N-S	
#11	7-685-862-09	SCREW +BVTT 2.6X6 (S)	
#12	7-621-734-09	SET-SCT,HEX. 2.6X3	
#13	7-621-255-15	SCREW +P 2X3	
#14	7-685-647-79	SCREW +BVTP 3X10 TYPE2 IT-3	
#15	7-682-548-04	SCREW +B 3X8	
#16	7-621-255-35	SCREW +P 2X5	
**********			
		ACCESSORIES & PACKING MATERIALS **********	
	1-473-546-11	REMOTE COMMANDER (RM-DL3)	
⚠	1-551-812-11	CORD, POWER (US, Canadian)	
⚠	1-590-910-11	CORD SET, POWER (AEP, UK)	
	2-297-913-00	WASHER (DIA.5), ORNAMENTAL	
	3-858-870-11	MANUAL, INSTRUCTION (ENGLISH, FRENCH, GERMAN)	
	4-941-762-11	COVER (MLY), BATTERY (for RM-DL3)	
	7-682-276-04	SCREW +RK 5X12	

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CDP-D500

SONY

SERVICE MANUAL

US Model
Canadian Model
AEP Model
UK Model

SUPPLEMENT-1

File this supplement with the service manual.

Subject: RS-232C serial Communication Protocol

CDP-D500 RS-232C SERIAL COMMUNICATION PROTOCOL

1. RS-232C

External equipment including a work station or personal computer can control the CDP-D500 or can sense internal information through connection with the D-sub 9-pin connector of the CDP-D500.

2. SPECIFICATIONS

Communication system : Start and stop sync type serial communication
Electrical characteristics : RS-232C compatible
Connector : D-sub 9-pin female

3. CONNECTION

3.1 Pin Assignment and Signals

Pin No.	I/O	Signals	Description
1	–	N.C.	No connection
2	I	RxD	Inputs reception data
3	O	TxD	Outputs transmission data
4	–	N.C.	No connection
5	–	GND	Ground
6	–	N.C.	No connection
7	O	RTS	Notifies that the set requests data transmission
8	I	CTS	Acknowledges that the personal computer requests data transmission
9	–	N.C.	No connection

3.2 Connection Method

Connect each pin as follows.

CDP-D500			Personal computer
2	RxD	←	Transmit Data pin
3	TxD	→	Receive Data pin
5	GND	–	Ground pin
7	RTS	→	Cleat to Send pin
8	CTS	←	Request to Send pin

3.3 Cable Connection

The CDP-D500 is equipped with a D-sub 9-pin female connector. For example, connect the CDP-D500 with a personal computer as follows.

3.3.1 IBM PC/AT compatible computer (D-sub 9-pin)

CDP-D500			IBM PC/AT	
D-sub 9-pin female			D-sub 9-pin male	
1			1	CD
2	RxD	←	3	TxD
3	TxD	→	2	RxD
4			4	DTR
5	GND	–	5	GND
6			6	DSR
7	RTS	←	8	CTS
8	CTS	→	7	RTS
9			9	CI

3.3.2 PC-9800 Series

CDP-D500			PC-9800 Series	
D-sub 9-pin female			D-sub 25-pin female	
1			1	CD
2	RxD	←	2	TxD
3	TxD	→	3	RxD
4				
5	GND	–	7	GND
6				
7	RTS	←	5	CTS
8	CTS	→	4	RTS
9				

4. COMMUNICATION SYSTEM

4.1 Start and Stop Sync Type Serial Communication

As the start and stop sync type serial communication is asynchronous, the transmission rate, start and stop of communication must be adjusted on both sides.

4.2 Setting for Communication

As mentioned above, no communication is made unless the setting for communication is same on both sides.Setting for communication of the CDP-D500 is as follows.

Items	Display	Available setting ([ ]: Factory setting)
Transmission rate	BAUD	38400, 19200, [9600], 4800. 2400, 1200 (bits/s)
Data bit length	DATA	[8], 7
Stop bit length	STOP	[1], 2
Parity	PAR	EVEN, ODD, [OFF (none)]

For the CDP-D500, operate as follows:

1. Press the ENTER key when no disc is loaded or the set is in stop status.
2. Select the menu with the JOG or AMS key.
3. When the menu concerned is displayed, change the setting with the SHUTTLE or FF/FR key. (In this case, characters/numeric value of the set item will be blinking.)
4. When the desired setting appears, press the ENTER key. (Blinking will stop.)
5. Press the ENTER key to exit from the menu.

NOTE: No setting is changed if you exit from the menu by pressing STOP key, etc. in step 3 above. Always press the ENTER key in step 4.

4.3 Different Communication Setting

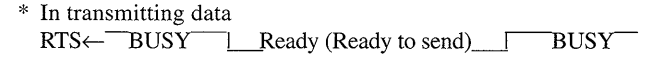
If the setting for communication is different between both sides, either of the following messages is output.

Kind of error	Message
Framing error	RS232 FER
Parity error	RS232 PER
Overflow error	RS232 OVF

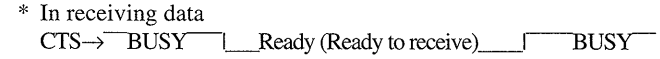
4.4 Communication Timing

RTS and CTS are both active low.
The timing chart is shown below.

* In transmitting data



* In receiving data



The personal computer must monitor CTS of the CDP-D500, and output RTS.

5. COMMAND TRANSMISSION FORMAT

The communication format of this set is described below.

5.1 Codes Used for Commands

All codes except header, footer, and special cases (see 5.5) are given in the ASCII format. Namely, one data is two bytes.

5.2 Description of Data String

The composition of a data string is as follows.

* Header
  A character that indicates the top of a command data string. 0ah (L.F: Line Feed) is used.

* Number of data
  Total number of bytes of subsequent command and data (except footer) is given with one data, that is , two bytes. The minimum figure used here is +2+, and maximum figure is +F+ (15). Therefore, the minimum number of data bytes in this format is 5 (header 1 + number of data indication 1 + command 2 + footer 1), and the maximum is 18 (header 1 + number of data indication 1 + command 2 + data 13 + footer 1).

* Command
  A command comprises one data, two bytes given in "6-1. Command Format".

* Data
  Data based on each command is descibed with ASCII codes (some are binary).

* Footer
  A character that indicates the end of a command data string. 0dh (C.R: Carriage Return) is used.

Data string overriew (number of bytes in ( ))

Header (1)	Number of data	Command (2)		Data (0-13)			Footer
0ah	**h	**h	**h	**h	**h		0dh

5.3 Example of Command

For example, a command for STOP is described here.
As the STOP command comprises a command 10h and data 00h (see back matter), the data string to be transmitted is "1" "0" "0" "0" (+X+ implies character X). Also, total number of data strings is 4, and therefore the number of data is "4". Accordingly, the command string is as shown below.

0ah	34h	31h	30h	30h	30h	0dh
L.F.	"4"	"1"	"0"	"0"	"0"	C.R.

If this command is sent, the STOP is executed immediately.

5.4 ASCII Codes

The ASCII codes used in this set are as listed below:

		09	TAB	0a	LF					0d	CR				
20	sp	21	!	22	"	23	#	24	$	25	%	26	&	27	'
28	(	29	)	2a	*	2b	+	2c	,	2d	–	2e	.	2f	/
30	0	31	1	32	2	33	3	34	4	35	5	36	6	37	7
38	8	39	9	3a	:	3b	;	3c	<	3d	=	3e	>	3f	?
40	@	41	A	42	B	43	C	44	D	45	E	46	F	47	G
48	H	49	I	4a	J	4b	K	4c	L	4d	M	4e	N	4f	O
50	P	51	Q	52	R	53	S	54	T	55	U	56	V	57	W
58	X	59	Y	5a	Z	5b	[	5c	/	5d	]	5e	^	5f	_
60	'	61	a	62	b	63	c	64	d	65	e	66	f	67	g
68	h	69	i	6a	j	6b	k	6c	l	6d	m	6e	n	6f	o
70	p	71	q	72	r	73	s	74	t	75	u	76	v	77	w
78	x	79	y	7a	z	7b	{	7c		7d	}	7e	~		

5.5 Exceptional Command Character Strings

In the ASCII format, 1-byte figure is expressed with a 2-byte character string and therefore the number of data transferred per time is limited.Thus, the ASCII/Binary send mode is provided for thecommands having many data so that a figure of data part can be given with one byte.
(**NOTE:** In this case, the end of data part should be judged from the number of data, because the data start (0ah) or end (0dh) code may appear in a data string.)

Upper / Lower	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		STOP, PAUSE, CUE STBY, EJECT		AUTO PAUSE AUTO CUE SENSE		MECHA STATUS SENSE	FRONT PANEL CONTROL					AUTO PAUSE AUTO CUE RETURN		MECHA STATUS RETURN		
1		PLAY														
2		EJECT					SUB-Q DATA SENSE	ILLEGAL SENSE REQUEST							SUB-Q DATA RETURN	
3			TRACK No. LOCATE POINT PRESET				PROGRAM TRACK No. SENSE				TRACK No. RETURN	TIMER PLAY RETURN			PROGRAM TRACK No. RETURN	
4				TIMER PLAY SENSE				POWER ON STATUS								
5						TRACK No. SENSE	PROGRAM DELETE REQUEST							CURRENT TRACK No. RETURN		
6							PROGRAM POINTER TRACK No. TIME REQUEST								PROGRAM TIME RETURN	
7		VARI SPEED ON/OFF				DISC NAME SENSE	CONFIGURATION PRESET			VARI SPEED ON/OFF RETURN				DISC NAME RETURN	CONFIGURATION RETURN	
8					TIME DISPLAY SELECT	CURRENT TRACK TIME SENSE							TIME DISPLAY RETURN	CURRENT TRACK TIME RETURN		
9		REHEARSAL				CURRENT TRACK DATA SENSE				REHEARSAL ON/OFF RETURN				CURRENT TRACK DATA RETURN		
A		TRACK LOCATE				PRESET TRACK DATA SENSE	CD TEXT SCAN MODE PRESET							PRESET TRACK DATA RETURN	CD TEXT SCAN MODE RETURN	
B		TRACK No. LOCATE				CURRENT TRACK REMAIN TIME SENSE								CURRENT TRACK REMAIN TIME RETURN		
C					SWITCH ENABLE SELECT	TOTAL TRACK REMAIN TIME SENSE							SWITCH ENABLE RETURN	CURRENT TOTAL REMAIN TIME RETURN		
D						TOTAL TRACK No./TIME SENSE								TOTAL TRACK No./ REMAIN RETURN		
E			VARI SPEED SET								VARI SPEED RETURN					
F	INFORMATION REQUEST								INFORMATION RETURN							

6.1 Command Format

One command consists of 1-byte command and several data.
The first half of 1-byte command 00h - 7fh is the transmission command to this set, and the second half 80h - ffh is the transmission command from this set. The return command for internal information request command uses a value added by 80h to the transmitted command, except some cases.

Example: Information request command is issued to this set → 0fh
Return command from this set → 0fh + 80h = 8fh
(then, data are transmitted)

6.2 Command Details

* Commands to this set
The commands concerning the CD TEXT are described later.

In the following description, 0ah = LF, 0dh = CR.

* CDP-D500 received commands

INFORMATION REQUEST

Command : 00Fh
Function : Requests the information such as model name and version of the CDP-D500.
Data : None
Return : 08Fh

Example : To request the information on CDP-D500
Command : 0fh
Transmitted data string
→ LF "2" "0" "F" CR
0ah 32h 30h 46h 0dh
Received data string
→ LF "6" "8" "F" "8" "0" "0" "0" CR
0ah 36h 38h 46h 38h 30h 30h 30h 0dh
(CDP-D500 Software Version 0.0)

STOP, PAUSE, CUE, STANDBY, EJECT

Command : 010h
Function : Executes STOP, PAUSE, CUE, STANDBY, or EJECT.
Data : 1
DATA1 : 000h : STOP
001h : CUE STBY
002h : PAUSE ON
003h : PAUSE OFF
004h : EJECT
Return : None

Example : To turn on pause
Command : 10h
Data : 02h
Transmitted data string
→ LF "4" "1" "0" "0" "2" CR
0ah 34h 31h 30h 30h 32h 0dh

PLAY

Command : 011h
Function : Executes playback.
Data : None
Return : None

Example : To execute playback
Command : 11h
Transmitted data string
→ LF "2" "1" "1" CR
0ah 32h 31h 31h 0dh

EJECT

Command : 012h
Function : Opens/closes the tray.
Data : None
Return : None

Example : Open/close the tray.
Command : 12h
Transmitted data string
→ LF "2" "1" "2" CR
0ah 32h 31h 32h 0dh

VARI SPEED ON/OFF

Command : 017h
Function : Turns on/off VARI SPEED function.
Data : 1
DATA1 : 000h : VARI SPEED OFF
001h : VARI SPEED ON
0ffh : VARI SPEED ON/OFF sense
Return : 097h

Example : To get (acquiring) VARI SPEED ON/OFF status
Command : 17h
Data : 0ffh
Transmitted data string
→ LF "4" "1" "7" "F" "F" CR
0ah 34h 31h 37h 46h 46h 0dh
Received data string
→ If VARI SPEED is turned ON
LF "4" "9" "7" "0" "1" CR
0ah 34h 39h 37h 30h 31h 0dh

REHEARSAL

Command : 019h
Function : Executes forward/backward click of REHEARSAL ON/OFF or REHEARSAL START position.
Data : 1
DATA1 : 000h : REHEARSAL OFF
001h : REHEARSAL ON
002h : FWD 1 click
003h : BWD 1 click
0ffh : REHEARSAL ON/OFF SENSE
Return : 099h

Example : To advance the rehearsal start position forward by one click
Command : 17h
Data : 02h
Transmitted data string
→ LF "4" "1" "9" "0" "2" CR
0ah 34h 31h 39h 30h 32h 0dh

TRACK LOCATE

Command : 01ah
Function : Feeds one track forward or reverse.
Data : 1
DATA1 : 000h : NEXT
001h : PREVIOUS
Return : None

Example : To make an access to the next track of currently playing track
Command : 1ah
Data : 00h
Transmitted data string
→ LF "4" "1" "A" "0" "0" CR
0ah 34h 31h 41h 30h 30h 0dh

TRACK No. LOCATE

Command : 01bh
Function : Makes an access to the track preset by command No.023h (Track No. Preset).
Data : 0
Return : None

Example : To locate currently preset track
Command : 1bh
Transmitted data string
→ LF "2" "1" "B" CR
0ah 32h 31h 42h 0dh

TRACK No. LOCATE POINT RESET

Command : 023h
Function : Presets (stores in the memory of CDP-D500) the track No.
Data : 2
DATA1 : Track No. 00 - 99 (preset with decimal number)
: 0ffh Senses located track No.
DATA2 : Mute be "0" "0"
Return : 0a3h
Example : If presetting track No.13
Command : 23h
Data : 13h 00h
Transmitted data string
→ LF "6" "2" "3" "1" "3" "0" "0" CR
0ah 36h 32h 33h 31h 33h 30h 30h 0dh

VARI SPEED SET

Command : 02eh
Function : Sets variable speed.
Data : 2
DATA1 : 000h : Sets speed specified by DATA2.
: 0ffh : Senses current speed.
DATA2 : Specify desired speed.
: DATA2 format
| bit7 : Sign 1 : Minus
0 : Plus
| bit6-bit0:Hexadecimal absolute value |
Return : 0aeh

Example : To set variable speed to –7.6%
Command : 2eh
Data : 00h cch.
Transmitted data string
→ LF "6" "2" "E" "0" "0" "C" "C" CR
0ah 36h 32h 45h 30h 30h 43h 43h 0dh

AUTO PAUSE, AUTO CUE SENSE

Command : 030h
Function : Get the AUTO PAUSE/AUTO CUE switch status.
Data : 1
DATA1 : 0ffh : AUTO PAUSE/AUTO CUE sense
Return : 0b0h

Example : To get whether the slide switch is in Auto Pause or Auto Cue status
Command : 30h
Data : 0ffh
Transmitted data string
→ LF "4" "3" "0" "F" "F" CR
0ah 34h 33h 30h 46h 46h 0dh
Received data string
→ If Auto Pause is turned on
LF "4" "B" "0" "0" "1" CR
0ah 34h 42h 30h 30h 31h 0dh

TIMER PLAY SENSE

Command : 034h
Function : Get the TIMER PLAY switch status.
Data : 1
DATA1 : 0ffh:TIMER PLAY sense
Return : 0b4h

Example : To get whether the slide switch is in Timer Play status or not
Command : 34h
Data : 0ffh
Transmitted data string
→ LF "4" "3" "4" "F" "F" CR
0ah 34h 33h 34h 46h 46h 0dh
Received data string
→ If Timer Play is turned off
LF "4" "B" "4" "0" "1" CR
0ah 34h 42h 34h 30h 31h 0dh

TIME DISPLAY SELECT

Command : 048h
Function : Selects the display of the set.
Data : 1
DATA1 : 000h : Current track elapsed time
001h : Current track remaining time
002h : Total remaining time
003h : Current track elapsed time (with frame)
004h : VARI SPEED display
0ffh : TIME DISPLAY sense
Return : 0c8h

Example : To selsect total remaining time display
Command : 48h
Data : 02h
Transmitted data string
→ "4" "4" "8" "0" "2" CR
0ah 34h 34h 38h 30h 32h 0dh

SWITCH ENABLE SELECT (KILL LOCAL)

Command : 04ch
Function : Turns ON/OFF the operation keys on the set.
Data : 1
DATA1 : 000h : LOCAL OFF
001h : LOCAL ON
0ffh : LOCAL ON/OFF sense
REQUEST: 0cch

Example : To turn off the keys on the set
Command : 4ch
Data : 00h
Transmitted data string
→ LF "4" "4" "C" "0" "0" CR
0ah 34h 34h 43h 30h 30h 0dh

MECHA STATUS SENSE

Command : 050h
Function : Get current mechanism status.
Data : 0
Return : 0d0h

Example : To get current mechanism status
Command : 50h
Transmitted data string
→ LF "2" "5" "0" CR
0ah 32h 35h 30h 0dh
Received data string
→ If mechanism is playing
LF "4" "D" "0" "0" "1" CR
0ah 34h 44h 30h 30h 31h 0dh

TRACK No. SENSE

Command : 055h
Function : Get currently played track No.
Data : 0
Return : 0d5h

Example : To get currently played track No.
Command : 55h
Transmitted data string
→ LF "2" "5" "5" CR
0ah 32h 35h 35h 0dh
Received data string
→ If No.23 track is being played
LF "4" "D" "5" "2" "3" CR
0ah 34h 44h 35h 32h 33h 0dh

CURRENT TRACK TIME SENSE

Command : 058h
Function : Get elapsed time of currently played track.
Data : 1
DATA1 : 000h : Sense in the unit of second
001h : Sense in the unit of frame
Return : 0d8h

Example : To get elapsed time in second
Command : 58h
Transmitted data string
→ LF "2" "5" "8" CR
0ah 32h 35h 38h 0dh
Received data string
→ In the case of 05:43
LF "8" "D" "8" "0" "0" "0" "5" "4"
0ah 38h 44h 38h 30h 30h 30h 35h 34h
"3" CR
33h 0dh

CURRENT TRACK REMAIN TIME SENSE

Command : 05bh
Function : Get the remaining time of currently played track.
Data : 0
Return : 0dbh

Example : If sensing the remaining time in second
Command:58h
Transmitted data string
→ LF "2" "5" "B" CR
0ah 32h 35h 42h 0dh
Received data string
→ In the case of 05:43
LF "6" "D" "B" "0" "5" "4" "3" CR
0ah 36h 44h 42h 30h 35h 34h 33h 0dh

TOTAL TRACK REMAIN TIME SENSE

Command : 05ch
Function : Get the remaining time from current playing point to the end of track.
Data : 0
RETUEN : 0dch

Example : Same as CURRENT TRACK REMAIN TIME SENSE (05ch)

TOTAL TRACK No./TIME SENSE

Command : 05dh
Function : Get total number of tracks and total time.
Data : 0
RETUEN : 0ddh

Example : Command : 58h
Transmitted data string
→ LF "2" "5" "D" CR
0ah 32h 35h 44h 0dh
Received data string
→ In the case of total tracks 10 and total time 55:43
LF "8" "D" "D" "1" "0" "5" "5" "4"
0ah 38h 44h 44h 31h 30h 35h 35h 34h
"3" CR
33h 0dh

FRONT PANEL CONTROL

Command : 060h
Function : Turns on respective keys on the front panel.
Data : 1
DATA1 : Selects respective keys.

CONTINUE	: 000h
SHUFFLE	: 001h (Front panel key not supported)
PROGRAM	: 002h
REPEAT	: 003h
EJECT	: 044h
VARI ON/OFF	: 005h
VARI RESET	: 006h
VARI UP	: 007h
VARI DOWN	: 008h
ENTER	: 049h
CLEAR	: 04ah
NEXT	: 00bh
PREV	: 00ch
CHECK	: 00dh
CUE STANDBY	: 00eh
X10	: 00fh
FADER	: 010h
FF	: 011h
FR	: 012h
TIME	: 054h
PLAY	: 015h
PAUSE	: 016h
STOP	: 057h
A-B REPEAT	: 01ch
REHEARSAL	: 01dh

Return : None

Example : To turn on the SHUFFLE key
Command : 60h
Data : 01h
Transmitted data string
→ LF "4" "6" "0" "0" "1" CR
0ah 34h 36h 30h 30h 31h 0dh

SUB-Q DATA SENSE

Command : 062h
Function : Get SUB-Q data at the current playing point.
Data : 1
DATA 1 : bit7 : 0 : Binary send mode
1 : ASCII send mode
bit0 : Don't care if bit7=1
0 : Senses relative time
1 : Senses absolute time
Return : 0e2h

Example : To get Q data in absolute time and ASCII send mode
Command : 62h
Data : 81h
Transmitted data string
→ LF "4" "6" "2" "8" "1" CR
0ah 34h 36h 32h 38h 31h 0dh
Received data string
→ If track No.=5, Index=1, and absolute time 31:28
LF "C" "E" "2" "8" "1" "0" "5" "0"
0ah 43h 45h 32h 38h 31h 30h 35h 30h
"1" "3" "1" "2" "8" CR
31h 33h 31h 32h 38h 0dh

PROGRAM TRACK No. SENSE

Command : 063h
Function : Programs track numbers.
Data : 2
DATA1 : Specify track numbers to be programmed.
0xff : Senses programmed tracks.
DATA2 : If DATA1 = 0ffh
bit 7 : 0 : Binary send mode
bit 6 - 0 :
000b : Get track No. 1 - 8
001b : Get track No. 9 - 16
002b : Get track No. 17 - 24
bit 7 : 1 : ASCII send mode
000b : Get track No. 1 - 4
001b : Get track No. 5 - 8
002b : Get track No. 9 - 12
003b : Get track No. 13 - 16
004b : Get track No. 17 - 20
006b : Get track No. 21 - 24
Return : 0e3h

Example : To add track No.4 to the program
Command : 63h
Data : 4
Transmitted data string
→ LF "4" "6" "3" "0" "4" CR
0ah 34h 36h 33h 30h 34h 0dh

PROGRAM DELETE REQUEST

Command : 065h
Function : Deletes a track from program.
Data : 1
DATA1: Specify the program position to be deleted.
Return : None

Example : To delete No.4 program
Command : 65h
Data : 4
Transmitted data string
→ LF "4" "6" "5" "0" "4" CR
0ah 34h 36h 35h 30h 34h 0dh

PROGRAM POINTER TRACK NO. TIME REQUEST

Command : 066h
Function : Get the time of track No. registered to programData
Data : 2
DATA1 : Program pointer to be sensed
0xff : Total time
Return : 0e6h

Example : To get total time of program
Command : 66h
Data : 0ffh
Transmitted data string
→ LF "4" "6" "6" "F" "F" CR
0ah 34h 36h 36h 46h 46h 0dh
Received data string
→ In the case of 54:03
LF "6" "E" "6" "5" "4" "0" "3" CR
0ah 36h 45h 36h 35h 34h 30h 33h 0dh

CONFIGURATION PRESET

Command : 067h
Function : Presets the functions of CDP-D500.
Data : 2
DATA1 : 000h : Rehearsal loop (Sec.)
001h : Rehearsal 1click (Frame)
002h : Fader sec (Sec.)
003h : Autocue level (dB)
004h : Remote key protect
005h : Remote Control protect
DATA2 : Preset data
If DATA1 = 000h
001h - 009h: 1 - 9 second
0xff : Get preset data
If DATA1 = 001h
001h - 04ah: 1 - 74 frame
0xff : Get preset data
If DATA1 = 002h
001h - 009h: 1 - 9 second
0xff : Get preset data
If DATA1 = 003h
000h : – 72dB
001h : – 66dB
002h : – 60dB
003h : – 54dB
004h : – 48dB
0xff : Get preset data
If DATA1 = 004h, 005h
000h : DISABLE
001h : ENABLE
0xff : Get preset data
Return : 0e7h

Example : To preset fader time to 3 sec
Command : 67h
Data : 02h 03h
Transmitted data string
→ LF "6" "6" "7" "0" "2" "0" "3" CR
0ah 36h 36h 37h 30h 32h 30h 33h 0dh

ILLEGAL SENSE REQUEST

Command : 072h
Function : Notifies that the set is in illegal status (an illegal command was received).
Data : 0
Return : None

POWER ON STATUS

Command : 074h
Function : Notifies that the power has been turned on.
Data : 0
Return : None

****

* Commands transmitted from this set

INFORMATION RETURN

Command : 08fh
Function : Returns information for 00fh command.
Data : 2
DATA1 : Model name
080h : CDP_D500
DATA2 : Software version
00h : 2 digit BCD
e.g : If version is 1.2, DATA2 is 012h.
Request : 00fh

VARI SPEED ON/OFF RETURN

Command : 097h
Function : Returns information for 017h command.
Data : 1
DATA1 : 000h : VARI SPEED OFF
001h : VARI SPEED ON
REQUEST: 017h

REHEARSAL ON/OFF RETURN

Command : 099h
Function : Returns information for 019h command.
Data : 1
DATA1: 000h : REHEARSAL OFF
001h : REHEARSAL ON
REQUEST: 019h

TRACK No. RETURN

Command : 0e3h
Function : Returns information for 023h command.
Data : 2
DATA1 : Upper: Second Digit of the track No.
Lower: First Digit of the track No.
DATA2 : Must be "0" "0"
REQUEST: 023h

VARI SPEED RETURN

Command : 0eeh
Function : Returns information for 02eh command.
Data : 1
DATA1 : Preset vari speed
DATA1 format
| bit7:Sign | bit6 - bit0:Hexadecimal absolute value |
REQUEST: 02eh

AUTO PAUSE, AUTO CUE RETURN

Command : 0b0h
Function : Returns information for 030h command.
Data : 1
DATA1 : 000h : AUTO PAUSE, CUE OFF
001h : AUTO PAUSE ON
002h : AUTO CUE ON
REQUEST: 030h

TIMER PLAY RETURN

Command : 0b4h
Function : Returns information for 034h command.
Data : 1
DATA1 : 000h : TIMER PLAY OFF
001h : TIMER PLAY ON
REQUEST: 034h

TIME DISPLAY RETURN

Command : 0c8h
Function : Returns information for 048h command.
Data : 1
DATA1 : 000h : Current track elapsed time
001h : Current track remaining time
002h : Total remaining time
003h : Current track elapsed time (with frame)
004h : VARI SPEED display
0ffh : TIME DISPLAY sense
Return : 048h

SWITCH ENABLE (KILL LOCAL) RETURN

Command : 0cch
Function : Returns information for 04ch command.
Data : 1
DATA1 : 000h : LOCAL OFF
001h : LOCAL ON
0ffh : LOCAL ON/OFF sense
REQUEST: 04ch

MECHA STATUS RETURN

Command : 0d0h
Function : Returns information for 050h command.
Data : 1
DATA1 : 001h : PLAY
003h : FF/FR
006h : ACCESS
010h : PAUSE ON
012h : STOP
014h : OPEN
REQUEST: 050h

CURRENT TRACK No. RETURN

Command : 0d5h
Function : Returns information for 055h command.
Data : 3
DATA1 : unused
DATA2 : Upper: Second Digit of the tracking
Lower: First Digital of the tracking
DATA3 : Must be "0" "0"
REQUEST: 055h

CURRENT TRACK TIME RETURN

Command : 0d8h
Function : Returns information for 058h command.
Data : 3 or 4
DATA1 : bit7 :0 : Index is not 0
1 : Index is 0
bit6 - bit0
000h : Sense in the unit of second
001h : Sense in the unit of frame
DATA2 : minute
DATA3 : second
DATA4 : frame
Request : 058h

CURRENT TRACK REMAIN TIME RETURN

Command : 0dbh
Function : Returns information for 05bh command.
Data : 2
DATA1 : minute
DATA2 : second
Request : 05bh

CURRENT TOTAL REMAIN TIME RETURN

Command : 0dch
Function : Returns information for 05ch command.
Data : 2
DATA1 : minute
DATA2 : second
Request : 05ch

TOTAL TRACK No./TIME RETURN

Command : 0ddh
Function : Returns information for 05dh command.
Data : 2
DATA1 : Total number of tracks
DATA2 : Total time (minute)
DATA3 : Total time (second)
Request : 05dh

SUB-Q DATA RETURN

Command : 0e2h
Function : Returns information for 062h command.
Data : 6/10
DATA1 : bit7 :0 : Binary send mode
1 : ASCII send mode
bit0 :Don't care if bit7 = 1.
0 : Senses relative time
1 : Senses absolute time
DATA2 : Track No.
DATA3 : INDEX
If bit7 = 1
DATA4 : MIN
DATA5 : SEC
DATA6 : FRAME
DATA7 : ZERO
DATA8 : AMIN
DATA9 : ASEC1
DATA10 : AFRAME
If bit7 = 0
DATA4 : Absolute (relative) time (minute)
DATA5 : Absolute (relative) time (second)
DATA6 : Absolute (relative) time (frame)
REQUEST: 062h

PROGRAM TRACK No. RETURN

Command : 0e3h
Function : Returns information for 063h command.
Data : 5/9
DATA1 :
bit 7 : 0 : Binary send mode
bit 6 - 0 :
000b : Get track No. 1 - 8
001b : Get track No. 9 - 16
002b : Get track No. 17 - 24
bit 7 : 1 : ASCII send mode
000b : Get track No. 1 - 4
001b : Get track No. 5 - 8
002b : Get track No. 9 - 12
003b : Get track No. 13 - 16
004b : Get track No. 17 - 20
006b : Get track No. 21 - 24
REQUEST: 063h

PROGRAM TIME RETURN

Command : 0e6h
Function : Returns information for 066h command.
Data : 2
DATA1 : minute
DATA2 : second
REQUEST: 066h

CONFIGURATION RETURN

Command : 0e7h
Function : Returns information for 067h command.
Data : 2
DATA1 : 000h : Rehearsal loop (Sec.)
001h : Rehearsal 1click (Frame)
002h : Fader sec (Sec.)
003h : Autocue level (dB)
004h : Remote key protect
005h : Remote Control protect
DATA2: Preset data
If DATA1 = 000h
001h - 009h : 1 - 9 second
0xff : Get preset data
If DATA1 = 001h
001h - 04ah : 1 - 74 frame
0xff : Get preset data
If DATA1 = 002h
001h - 009h : 1 - 9 second
0xff : Get preset data
If DATA1 = 003h
000h : – 72dB
001h : – 66dB
002h : – 60dB
003h : – 54dB
004h : – 48dB
0xff : Get preset data
If DATA1 = 004h, 005h
000h : DISABLE
001h : ENABLE
0xff : Get preset data
REQUEST: 067h

CD TEXT Data Sensing

1) Command assignment
   To sense the CD TEXT data, the following commands are assigned.
   Sense the disc title: 057h
   Sense the information on current track: 059h
   Sense the information on preset track: 05ah (see Command No.23h)
2) Data setting
   Designate the CD TEXT information to be acquired with two data annexed to CMD.

DATA0 : Pointer for the data to be sensed
As 8 characters in binary send mode or 4 characters in ASCII send mode are transmitted per packet, 4 or 8 characters are sensed from the 4th or 8th data designated here. Designation range is 00h - 0ffh.

To get data with DATA1 in binary send mode
Pointer=0→ Getting 1st to 8th characters of a character string
Pointer=1→ Getting 9th to 16th characters of a character string
:
Pointer=0ffh→ Sensing 2041th to 2048th characters of a character string

DATA1: |bit7|bit6|bit5|bit4|bit3|bit2|bit1|bit0|

- bit4-bit3: Category: Category of CD TEXT to be sensed
  - 0000 (0) → Title Name
  - 0001 (1) → Artist
  - 0010 (2) → Composer
  - 0011 (3) → Songwriter
  - 0100 (4) → Arranger
  - 0101 (5) → Message
  - 0110 (6) → Disc ID
  - 0111 (7) → Genre ID
  - 1000 (8) → TOC Information
  - 1001 (9) → 2nd TOC Information
  - 1110 (0dh) → Pos/ISRC
  - 1111 (0fh) → Size Pack Informaion
- bit2-bit0: Block No.
  - 000 (0) - 007 (7)
- bit7: Send mode
  - 0: Binary send mode
  - 1: ASCII send mode

Binary send mode
1-byte data are sent as they are. 8 characters can be sent per packet. This mode is used to sense a language in 1-byte charactor code.
ASCII send mode
1-byte data are converted into ASCII codes separately for higher and lower digits, then sent as 2 bytes. This mode is used to get a lauguage in 2-byte-character code.

3) Transmission packet from main unit
   4-character (ASCII) or 8-character (Binary) data are sent depending on the designated send mode.
   If 00h (NULL) is contained in a character string, it means the end of data. Or, if not there are successive data.

Example : To get the following data of CD TEXT data at current track
* track title (in English)
* at track No.0
* in binary mode

The title name concerned is "I'll be there for you".

* Send the command 059h.
  Command : 059h
  Data : 00h 00h
  Transmitted data string
  → LF "6" "5" "9" "0" "0" "0" "0" CR
  0ah 36h 35h 39h 30h 30h 30h 30h 0dh
  Received data string
  → LF "E" "D" "9" "0" "0" "0" "0" "I"
  0ah 45h 44h 39h 30h 30h 30h 31h 49h
  "_" "'" "l" "l" "_" "b" "e" "_" CR
  20h 6ch 6ch 20h 62h 65h 20h 0dh

* (As NULL is not contained in a character string) advance the pointer to be sensed by one, and again send the command.
  Data : 01h 00h
  Transmitted data string
  → LF "6" "5" "9" "0" "1" "0" "0" CR
  0ah 36h 35h 39h 30h 31h 30h 30h 0dh
  Received data string
  → LF "E" "D" "9" "0" "1" "0" "0" "t"
  0ah 45h 44h 39h 30h 31h 30h 31h 74h
  "h" "e" "r" "e" "_" "f" "o" CR
  68h 65h 72h 65h 20h 66h 6fh 0dh

* (As NULL is not contained in a character string) advance the pointer to be sensed by one, and again send the command.
  Data : 02h 00h
  Transmitted data string
  → LF "6" "5" "9" "0" "2" "0" "0" CR
  0ah 36h 35h 39h 30h 31h 30h 30h 0dh

  Received data string
  → LF "C" "D" "9" "0" "2" "0" "0" "r"
  0ah 43h 44h 39h 30h 32h 30h 31h 72h
  "_" "y" "o" "u" NULL CR
  20h 79h 6fh 75h 00h 0dh

As NULL (00h) appears in data, the data transmission is finished.

Note: "_" (underbar) in data string implies a space.

****

* CD TEXT Commands

DISC NAME SENSE (CD TEXT)

Command : 057h
Function : Senses disc title.
Data : 2
DATA1 : Pointer for the first character to be sensed
DATA2 : Designate Send mode/Block No. (Category not used)
Return : 0d7h

CURRENT TRACK DATA SENSE (CD TEXT)

Command : 059h
Function : Senses CD TEXT information on current track.
Data : 2
DATA1 : Pointer for the first character to be sensed
DATA2 : Designate Send mode/Block No./Category
Return : 0d9h

PRESET TRACK DATA SENSE (CD TEXT)

Command : 05ah
Function : Senses CD TEXT information on the track preset by 023h (Track No. Preset).
Data : 2
DATA1 : Pointer for the first character to be sensed
DATA2 : Designate Send mode/Block No./Category
Return : 0dah

CD TEXT SCAN MODE PRESET (CD TEXT)

Command : 06ah
Function : Presets CD TEXT data reading mode.
After a disc is inserted, CD TEXT data of the preset block No. is read and loaded into the memory of the set.
Data : 1
DATA1 : Designate block No.
00h - 07h: Block No.
0aah : Designate all block numbers
0ffh : Sense preset data
Return : 0eah

Example : If presetting block No.1 for CD TEXT reading
Command : 6ah
Data : 01h
Transmitted data string
→ LF "4" "6" "A" "0" "1" CR
0ah 36h 36h 41h 30h 31h 0dh

Note: It will take longer time to read data, if "all languages" is selected for DATA.

****

* CD TEXT Return Commands

DISC NAME RETURN (CD TEXT)

Command : 0d7h
Function : Returns information for the 057h command.
Data : 6/10
DATA1 : Pointer for the first character
DATA2 : Designate Send mode/Block No./Category (category not used)
DATA3 - DATA6/10 : Character string data
Request : 057h

CURRENT TRACK DATA RETURN (CD TEXT)

Command : 0d9h
Function : Returns information for the 059h command.
Data : 6/10
DATA1 : Pointer for the first character
DATA2 : Designate Send mode/Block No./Category (category not used)
DATA3 - DATA6/10: Character string data
Request : 059h

PRESET TRACK DATA RETURN (CD TEXT)

Command : 0dah
Function : Returns information for the 05ah command.
Data : 6/10
DATA1 : Pointer for the first character
DATA2 : Designate Send mode/Block No./Category (category not used)
DATA3 - DATA6/10: Character string data
Request : 05ah

CD TEXT SCAN MODE RETURN

Command : 0eah
Function : Returns information for the 06ah command.
Data : 1
DATA1 : Current block No.
00h - 07h: Block No.
0aah: Designate all block numbers
Request : 06ah

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